Tampere University

ELINA TOLVANEN

Patient Enablement After a Single GP Consultation in Primary Health Care

Measurement validation for patient enablement in Finland

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To Tyyne, Johannes, and Topi

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Tampere, September 2020
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ABSTRACT

Patient enablement is a concept developed to indicate quality of care in primary health care. To measure this, the Patient Enablement Instrument (PEI), a six-item questionnaire, was introduced in the UK in the 1980s. The PEI questionnaire is administered to the patient after an appointment with a physician, usually a general practitioner (GP). With the PEI, the patient evaluates the change in his/her ability to understand and cope better with his/her illness and life after having the appointment.

The PEI provides a generic approach to quality measurement after a GP appointment; it is not disease-specific and thus it is more suitable to be used in the primary health care context. The PEI has been applied in several countries. However, there is only a limited amount of research about the PEI in Nordic countries. In addition, a comparative analysis of patient enablement in an international context is lacking.

According to the literature, the PEI seems to be a unidimensional measurement with high internal consistency, reflecting that all the items of the PEI measure the same concept. Thus, it could be possible to measure patient enablement using only a single question instead of six. In the Quality and Costs of Primary Care in Europe (QUALICOPC) study, a single-item measure based on the PEI was introduced. The correspondence of this single-item measure and the PEI was not previously known.

This study consists two parts and aims. The first aim was to evaluate the PEI as a patient-reported outcome measure (PROM) as well as the correspondence of the PEI and a single-item measure in the Finnish primary health care context. The second aim was to study associations and variations in patient enablement in international context, using a single-item measure based on the PEI.

The data used in this study originate from two sources. The data for the Patient Enablement in Pirkanmaa study – to evaluate the validity and reliability of the PEI and the single-item measure – were collected in three health care centres in Pirkanmaa in spring 2017. The patient enablement in Pirkanmaa study data included 483 patients. The data for the QUALICOPC study, which included the single-item measure for patient enablement, were collected between years 2011 and 2013. The data used in our analyses included responses from 7,210 GPs and 61,458 patients

from 31 countries altogether. The QUALICOPC data were used to analyse associations between independent variables and patient enablement and the variation between countries, GPs and patients.

The main findings of this study show that the PEI has good psychometric properties in the Finnish primary health care context. In addition, patient enablement could be measured using a single-item measure. Single-item measure Q2, in particular, originally a part of the PEI questionnaire, has good criterion validity in relation to the PEI. This measurement would be rather easy to implement for quality measurement in Finnish primary health care.

When considering the international context, several independent variables – for example patient´s age and gender – seem to have statistically significant associations with patient enablement. On the other hand, the association of cluster-level – patients visiting a certain practice and living in a certain country – was stronger than any of the independent variables. Furthermore, the majority of the variation between countries is explained by cultural dimensions, suggesting that the mechanisms behind patient enablement are at least partly culture-dependent. In contrast, differences in health care systems do not seem to explain the variation. This implies that researchers should be aware of cultural differences when comparing and adapting patient-reported measures in different countries.

TIIVISTELMÄ

Potilaan pärjäämisen tunne (“patient enablement”) on terveydenhuollon laatua ilmaiseva käsite. Sitä mittaa Patient Enablement Instrument (PEI) -mittari, joka kehitettiin Isossa-Britanniassa 1980-luvulla. PEI-mittari sisältää kuusi kysymystä, joihin potilas vastaa käytyään yleislääkärin vastaanotolla. Potilas arvioi, muuttuiko hänen ymmärryksensä sairaudestaan ja käsityksensä sairautensa kanssa selviytymisestä hänen käytyään lääkärin vastaanotolla.

PEI-mittari on yleisluontoinen eikä liity mihinkään tiettyyn sairausryhmään. Näin ollen se soveltuu käytettäväksi perusterveydenhuollon laadun mittarina. PEI-mittaria on käytetty useissa maissa, mutta tutkimuksia Pohjoismaista on vain vähän. Myös laajempi kansainvälinen vertailu potilaan pärjäämisen tunteesta puuttuu.

Aiempien tutkimustulosten perusteella PEI-mittarilla on hyvä sisäinen yhtäpitävyys eli kaikki sen kuusi kysymystä mittaavat samaa kokonaisuutta. Siten voidaan ajatella, että potilaan pärjäämisen tunnetta olisi mahdollista mitata käyttäen vain yhtä kysymystä kuuden sijaan. Kansainvälisessä Quality and Costs of Primary Care in Europe (QUALICOPC) -tutkimuksessa käytettiin PEI-mittarin pohjalta kehitettyä kysymystä. Tämän kysymyksen vastaavuutta PEI-mittariin ei ole aiemmin tutkittu.

Tämä tutkimus koostuu kahdesta osiosta. Ensimmäisen osion tarkoituksena oli tutkia PEI-mittarin ominaisuuksia ja käytettävyyttä suomalaisessa perusterveydenhuollossa sekä verrata PEI-mittaria ja QUALICOPC-tutkimuksen yhden kysymyksen mittaria toisiinsa. Toisen osion tarkoituksena oli analysoida potilaan pärjäämisen tunteeseen liittyviä tekijöitä sekä tehdä kansainvälistä vertailua käyttäen yhden kysymyksen mittaria.

Tämän tutkimuksen aineistona käytetään kahta eri havaintoaineistoa. Potilaan pärjäämisen tunne Pirkanmaalla -tutkimus toteutettiin kolmessa pirkanmaalaisessa terveyskeskuksessa keväällä 2017. Sen avulla analysoitiin PEI-mittarin osuvuutta (validiteettia) ja luotettavuutta (reliabiliteettia). Toisena aineistona toimi QUALICOPC-tutkimusaineisto, joka kerättiin vuosina 2011-2013. Tässä tutkimuksessa käytetty data sisälsi vastauksia 7210 yleislääkäriltä ja 61458 potilaalta, yhteensä 31 maasta. QUALICOPC-aineiston avulla analysoitiin yksittäisten muuttujien yhteyttä potilaan pärjäämisen tunteeseen ja pyrittiin selittämään potilaan

pärjäämisen tunteen vaihtelua maiden, yleislääkäreiden ja potilaiden välillä. Potilaan pärjäämisen tunnetta mitattiin yhden kysymyksen mittarilla.

Tämän tutkimuksen päätulosten perusteella PEI-mittari soveltuu käytettäväksi suomalaisessa perusterveydenhuollossa. Potilaan pärjäämisen tunnetta voidaan myös luotettavasti mitata käyttäen yhtä kysymystä kuuden sijaan. Etenkin yhden kysymyksen mittari Q2, joka sisältyy alkuperäiseen PEI-mittariin, vastaa hyvin PEI-mittaria eli sen kriteerivaliditeetti on hyvä. Tämä mittari olisi verrattain helppo ottaa käyttöön yhdeksi laatumittariksi suomalaisessa perusterveydenhuollossa.

Kansainvälisen analyysin perusteella monilla itsenäisillä muuttujilla, kuten potilaan iällä ja sukupuolella, on tilastollisesti merkitsevä yhteys potilaan pärjäämisen tunteeseen. Toisaalta monitasomallinnuksen ryhmittelytasolla - sillä, että potilas kävi tietyllä lääkärin vastaanotolla ja eli tietyssä maassa - oli vahvempi yhteys pärjäämisen tunteeseen kuin millään itsenäisellä muuttujalla. Suurin osa maiden välisestä vaihtelusta potilaan pärjäämisen tunteessa selittyy kulttuurisilla tekijöillä. Sen sijaan esimerkiksi terveydenhuoltojärjestelmän erot eivät selitä maiden välistä vaihtelua. Mahdollisesti potilaan pärjäämisen tunnetta synnyttävät mekanismit ovat ainakin osittain kulttuurisidonnaisia. Tutkijoiden tulisikin olla tietoisia kulttuuristen tekijöiden vaikutuksista, kun potilaslähtöisten mittarien tuloksia vertaillaan eri maiden välillä tai eri maissa tutkittuja mittareita otetaan käyttöön.

CONTENTS

List of Figures

List of Tables

ABBREVIATIONS

C-DEPS	Chinese Diabetes Empowerment Process Scale
COSMIN	Consensus-based standards for the selection of health measurement instruments
COPD	Chronic obstructive pulmonary disease
DES	Diabetes Empowerment Scale
e.g.	Exempli gratia, for example
EQUIP	The European Society for Quality and Patient Safety in Family Practice
EUPHIX	European Union Public Health Information and Knowledge system
GP	General practitioner
HCCQ-D	Health Care Climate Questionnaire
HEI-Q	Health Education Impact Questionnaire
HR-PRO	Health-related patient-reported outcome
ICT	Information and communication technology
i.e.	Id est, that is
IDV	Individualism versus Collectivism
IOM	Institute of Medicine
IVR	Indulgence vs restraint
K-HES	Korean Health Empowerment Scale
LTOWVS	Long-Term vs Short-Term Orientation
MAS	Masculinity vs Femininity
MOR	Median odds ratio
NA	Not applicable
NIVEL	The Netherlands Institute for Health Services Research
OECD	Organisation for Economic Co-operation and Development
OR	Odds ratio
PAM	Patient Activation Measure
PDI	Power Distance
PEI	Patient Enablement Instrument

PEQ	Patients´ expectations questionnaire
PHAMEU	Primary health care activity monitor in Europe
PRO	Patient-reported outcome
PROM	Patient-reported outcome measure
QUALICOPC	Quality and Costs of Primary Care in Europe
SD	Standard deviation
SEM	Standard error of measurement
SeMaS	Self-Management Screening
SMAS-30	Self-Management ability
SUPES	Service User Psychological Empowerment Scale
UAI	Uncertainty Avoidance
UK	The United Kingdom
US	The United States
VPC	Variance partition coefficient
VSM2013	Values Survey Module 2013
WHO	World Health Organization
WONCA Europe	The European Regional Branch of the World Organization of National Colleges, Academies and Academic Associations of General Practitioners/Family Physicians

ORIGINAL PUBLICATIONS

Publication I	Tolvanen E, Koskela TH, Helminen M, Kosunen E. The validity and reliability of the Patient Enablement Instrument (PEI) after GP appointments in Finnish health care centres. J Patient Rep Outcomes 4, 79 (2020). https://doi.org/10.1186/s41687-020-00243-4.me
Publication II	Tolvanen E, Koskela TH, Kosunen E. Comparison of the Patient Enablement Instrument (PEI) with two single-item measures among Finnish health care centre patients. BMC Health Serv Res. 2019;19(1):376.
Publication III	Tolvanen E, Koskela TH, Helminen M, Kosunen E. Patient enablement after a single appointment with a GP: Analysis of Finnish QUALICOPC data. J Prim Care Community Heal. 2017;8(4):213–20.
Publication IV	Tolvanen E, Groenewegen PP, Koskela TH, Bjerve Eide T, Cohidon C, Kosunen E. Patient enablement after a consultation with a general practitioner – explaining variation between countries, practices and patients. Health Expect. 2020 Jun 29. doi: 10.1111/hex.13091. Online ahead of print.

1 INTRODUCTION

Quality in health care is as multidimensional a concept as the health care itself. In this context, quality could refer to nearly anything, from the actual care act between individuals to health system properties worldwide. Quality does not exist as such, but its determination is heavily dependent of the context and the evaluator. In theory, quality in health care could be anything that is considered important and worth cherishing.

Analogously, measuring quality in health care and hence the measurements themselves, are dependent on our perspective. In this study, we look at quality in the primary health care context. Primary health care is defined as the local, first-contact care setting, usually in a patient´s own community (1). For example, unlimited accessibility, comprehensiveness and continuity are essential properties of primary health care (1–4). In primary health care, the range of problems that patients present during consultations is unrestricted, a specific diagnosis is often not reached (5,6), and a large part of care is unplanned or opportunistic.

In this study, we concentrate on patient-perceived quality, through patient-reported measures. When measuring quality, we also need to assess the quality of the measurements. With patient-reported measures, we need to evaluate the validity and reliability of the measurements. Do these measurements measure constructs they are supposed to measure? Are the results of the measurements free from error? Does the measurement give similar results when measured after a period of time? Also, we need to take into account the comprehensive nature of primary health care when selecting the suitable measurements.

Patient enablement is one construct developed to measure quality in primary health care. It refers to the patient´s ability to understand and cope with illness and life after having an appointment with a general practitioner (GP). The Patient Enablement Instrument (PEI) is a six-item questionnaire, addressed to a patient after a GP consultation. (7) Thus, it is called a patient-reported outcome measure (PROM). The PEI is a transitional instrument, measuring the change in a patient´s perceptions due to the consultation.

The present study aims to assess the PEI as a PROM and to introduce an alternative way to measure patient enablement. Furthermore, the purpose of this study is to increase knowledge about patient enablement in the international context.

2 REVIEW OF LITERATURE

2.1 Quality in health care: definitions

´As such, the definition of quality may be almost anything anyone wishes it to be, although it is, ordinarily, a reflection of values and goals current in the medical care system and in the larger society of which it is a part.´ -Avedis Donabedian, 1966. (8)

Literature about the quality of health care is abundant, including several definitions, and reflects the multifaceted nature of the idea of quality. For example, quality in health care is described as ´an abstraction defining the margin between desirability and reality´ (9), ´degree to which (perceived) performances of health and social care services meet the needs of people with respect to important aspects´ (10) or ´patients´ ability to access effective care with the aim of maximising health benefit in relation to need´ (11). Quality is seen as a degree of perfection with certain context dependence; it is described not to exist as such (12).

Probably one of the best known quality frameworks in the field of health services research (13) is presented in the article ´Evaluating the quality of medical care´ by Avedis Donabenian, published in 1966 (8). In that article, Donabedian presents a division of health care quality into structure, process and outcome. Structure refers to the health care setting and personnel (where and by whom the treatment happens). Process means the actions in health care (what actually happens when the patient is treated). Outcome includes the results of care (what kind of change in the patient´s health status, knowledge, or behaviour is induced by the treatment). (8) Outcome could also include user evaluation, such as patient satisfaction (11).

Health care quality could be observed from several viewpoints – for example, from the perspective of populations, health care systems, health care providers, or individuals. Concerning populations or systems, the World Health Organization (WHO) indicates that, in terms of quality, health care should be: effective, efficient, accessible, acceptable/person-centred, equitable, and safe (14). The Institute of Medicine (IOM) in the United States (US) uses a very similar definition (15). In these definitions, effectiveness refers to delivering care that is based on need, adheres to evidence and results in improved health outcomes, whereas efficiency refers to maximising resources and avoiding waste. Accessibility is seen as delivering care in an appropriate setting and at appropriate time and place. Acceptable/person-centred care is regarded as taking into consideration individuals and their cultures. Equitable care does not vary because of personal characteristics, such as ethnicity, gender or socioeconomic status. Safety refers to minimizing risk and harm. (14,15)

Campbell et al. have stated that quality of care has the most meaning when related to individual users (11). At that level, quality in health care can be seen to consist of different dimensions, such as technical and interpersonal quality (16,17). Technical quality means that a patient receives only the necessary procedures (or treatments or services) which are performed in an excellent manner and where the desired health outcome exceeds the risks. Interpersonal quality refers to treatment given in a humane, culturally appropriate, patient-involving manner. (17)

Yet another way is to observe quality as a combination of clinical and perceived quality. Clinical quality of care relates to the interaction between healthcare providers and patients. Furthermore, it includes the ways in which inputs from the health system are transformed into health outcomes. Perceived quality is the patient´s subjective assessment of quality. (18) Patient´s perception of care is suggested to be a crucial element when assessing quality of care (18,19).

A conceptual figure of health care quality, inspired by the literature above, is presented in Figure 1. In conclusion, health care quality could be seen as a product of a certain health care context, reflecting the values of the assessors in that context. Quality emerges from the performance of the actual care/caregivers, which should meet the needs and desires of a certain individual, system or population. Indeed, quality in health care is a multi-dimensional, complex concept and very dependent on the viewer´s perspective. In this study, the viewpoint is in the patient´s experience of quality, which is related to acceptable and person-centred care, interpersonal quality, and perceived quality.

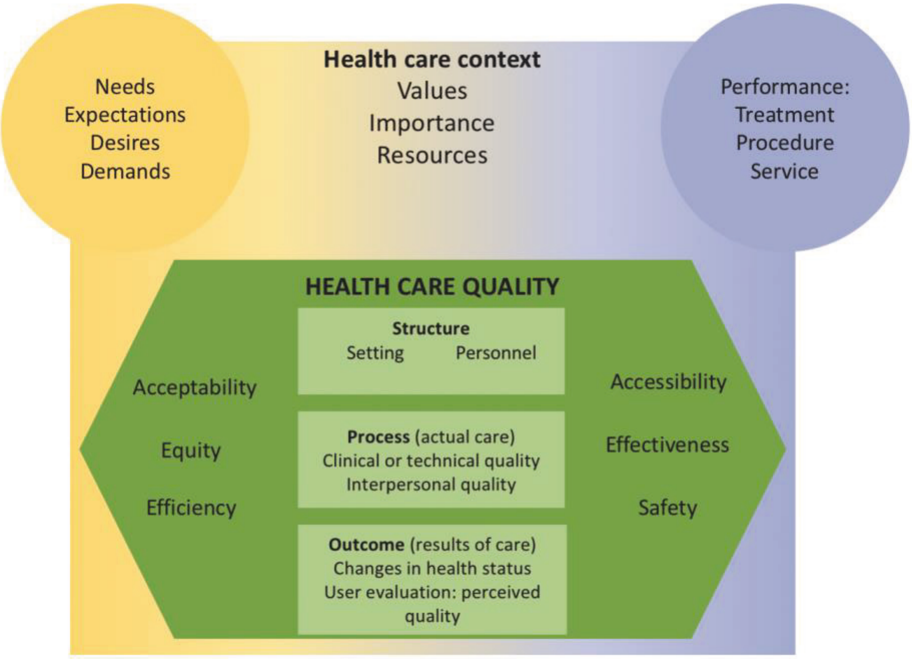


Figure 1. A conceptual figure of health care quality, inspired by literature: Brook RH, McGlynn EA, Shekelle PG (17); Campbell SM, Roland MO, Buetow S (11); Donabedian A (8); Donabedian A (16); Grol R, Wensing M, Mainz J, et al. (19); Hanefeld J, Powell-Jackson T, Balabanova D (18); Harteloh PPM (12); Maanen HMT (9); WHO. (14); Wolfe A (15); Zastowny TR, Roghmann KJ, Hengst A (10)

2.1.1 Quality definitions in Finnish health care

In Finland, the requirements of health care quality are written into the Finnish legislation. The Health Care Act states: ´The provision of health care shall be based on evidence and recognized treatment and operational practices. The health care provided shall be of high quality, safe, and appropriately organised. [...] Each health care unit shall produce a plan for quality management and for ensuring patient safety´ (20). A report by the Finnish National Research and Development Centre for Welfare and Health (nowadays the National Institute of Health and Welfare) defines quality as the properties which form the ability of the service or product in question to meet the expectations and demands set to it (21). When considering health care, high-quality care shall produce welfare, minimise risks, maximise health benefits, and be based on evidence or the best knowledge available (21). High-quality care means that the service for the customer is appropriate and occurs at the right time and in the right place (21).

2.2 Definitions of primary health care and general practice

Primary health care is defined as the setting in which the first contact with a health professional occurs – usually located in the patient´s own community (1). Moreover, primary health care is seen as a multidimensional system, with governance, economic conditions, and workforce development as main structures (3). Primary health care has various meanings across countries, but it is described standing at the centre of medical care systems (22). The key elements of primary health care include first-contact, unlimited accessibility (1–4,22); coordination (1–4,22); patient- or goal-centredness rather than disease-centred care (1,2,4,22,23); continuity (1–3,23); comprehensiveness (1–4); and population-based, local distribution of services (1,3,4).

General practice or family medicine, on the other hand, is an academic and scientific discipline (1). It has its own features of clinical specialty, educational content, research, and evidence base, which are all orientated to primary health care (1). The European regional branch of the World Organization of National Colleges, Academies and Academic Associations of General Practitioners/Family Physicians (WONCA Europe) has formulated a consensus statement about the definition of the discipline as well as the professional tasks and core competencies of a general practitioner. These core competencies include primary care management, person-centred care, specific problem solving skills, comprehensive approach, community orientation, and holistic approach (1).

2.2.1 Primary health care structure and settings

Primary health care is arranged in various ways across countries with, for example, different health policies, regulations, financial arrangements and professional roles in primary health care. Kringos et al. have edited a large comparative study about European primary health care systems in 31 countries (24). They observe different health care settings from the perspective of health care structure divided by governance, economic conditions and workforce development (3,24,25).

In this framework by Kringos et al., primary health care governance refers to the degree of emphasis on primary health care when regarding policies, governmental visions, stakeholder and community involvement, quality assurance, and patient laws. In more than half of the countries under observation, there is a governmental vision about the future and direction of primary health care. Almost two-thirds of those countries have a specific budget for primary health care. In a minority of countries, primary health care has been centralised; in the majority, there are regional and local arrangements, regulations and funders. Patient rights and quality assurances, such as national guidelines and educational requirements for the workforce, apply in most of the countries. (24)

Economic conditions for primary health care include, for example, expenditures, coverage of costs for patients and employment status of the GPs. The total share for primary health care out of all health expenditures varies from 4.7% in the Czech Republic to 25.6% in Switzerland – unfortunately, these data are not available for all countries. GPs are predominantly self-employed, at least in countries with health insurance systems, or salaried, usually by authorities, in countries with a governmental budget. Total gross domestic product per capita seems not to be associated with total primary health care economic conditions. (24)

Workforce development refers to the features and positions of professionals working in primary health care. In all 31 countries under observation, there were GPs working in primary health care; nurses and dentists also work as a part of primary health care in the majority of the countries. In several countries, the patients have direct access to some medical specialists, and thus gynaecologists and paediatricians, for example, are part of the primary health care workforce. In two-thirds of the countries, the GP task profile is formally described. In the majority of countries, GPs have their own professional organisations and general practice is included in the undergraduate training. (24)

In practice, the primary health care setting is dependent the overall structural features of each country. Health care could be funded by governmental budget, national or individual insurances or pay-for-performance – or a of combination of these may apply (26). GP practices could range from a single-physician practice to large multi-disciplinary centres, with the trend evolving towards group practices (26). Practice facilities and readiness to perform technical procedures vary to a large extent (27,28). In some countries, patients should, or are financially encouraged to, have their own GP – in others, patients can choose rather freely which service to use (26). A GP may be a person´s first contact with health care, acting as a kind of gatekeeper for specialised care, or patients may have direct access to specialised care (24,26).

2.2.2 Primary health care setting in Finland

The Finnish primary health care system is universal and taxation-based. Public primary health care services are mainly provided by health centre organisations arranged and provided by municipalities or federations of municipalities. In addition, there are private practices and occupational health care units that also provide primary health care (28,29).

In 2017, there were 311 municipalities (30) and 142 health centre organisations (31) in Finland. Depending on the size of the municipality, a health care organisation may include one or several multidisciplinary health centres or stations providing primary health care. Organisations can arrange their services rather freely: for example, a GP list system, when there is one, could be based on geographical distribution of the population or a patient´s voluntary choice. In general, it is not compulsory for patients to have their own GPs. Nevertheless, primary health care doctors work as gatekeepers in relation to hospital referrals.

Public health care centres/organisations provide a wide range of services, from preventive care and family planning to care for the elderly and inpatient care in small hospital-like departments, and almost anything in between. National guidelines apply, for example, to maternity care and screening, but otherwise legislation does not stipulate how to arrange the services (29). Health care centres are usually well-equipped (28,29), and Finnish GPs perform medical procedures more often than their European colleagues (32,33). Most health care centres provide both urgent and non-urgent appointments with a GP on weekdays. Finnish GP appointments are usually fairly long, from 15 to 30 minutes (34), and several issues are usually handled within the same appointment.

Finnish primary health care accounted for 16.2% all health expenditures in 2017. The proportion has stayed quite steady during the past years, while in contrast, the expenditures for secondary health care grew by 5.2% between 2016 and 2017 (35). In terms of health personnel, in 2015, altogether 22% of working-aged doctors worked in health care centres, 18% in private practices and 44% in hospitals. The shortage of physicians in public health care centres was 5.7% overall, varying from 0 to 20% (36).

Despite several reforms in the Finnish health care field in recent decades, some challenges remain. When considering quality in primary health care, access to care and continuity of care are the most challenging features. Wait times for appointments tend to be long; in 2017, over one fourth of patients claimed to have troubles with long wait times (37). This applies also for secondary care, although the situation has improved in recent years (38). In addition, the continuity of care in primary health care has deteriorated over the last two decades (39). However, over one-half of patients state that they will primarily contact a municipal health care centre when needing medical assistance and the vast majority of patients express that they trust doctors in general (40).

Since 1970, general practice has been an individual specialty in Finland. The training programme for general practice has a six-year curriculum. However, a doctor may work as a GP in public or private sector without specialisation. (28) Thus, in this study, GP in the Finnish context refers to a doctor working in a health care centre. In 2016, the mean age of Finnish GPs was 43 years (36). Altogether 65% of GPs were female and 40% had a specialist degree (36).

2.3 Definitions of culture and cultural dimensions

Culture could be defined as the customary beliefs, social forms, and material traits of a certain group – e.g. social, ethnic or religious – or ´the integrated pattern of human behaviour including thought, speech, action, and artefacts´ (41).

In this study, we use Hofstede´s theory about national cultures. This model was created in the 1970s by Dutch engineer and sociologist Geert Hofstede. Hofstede´s theory about four cultural dimensions was firstly based on 116,000 respondents in 40 countries – employees of a multinational corporation. Since then, several rounds and replication studies have been performed. (42) Nowadays, the theory of cultural dimensions have been extended into six different dimensions (42) and applied in 111 countries (43). Those include PDI – Power Distance, IDV – Individualism vs Collectivism, MAS – Masculinity vs Femininity, UAI – Uncertainty Avoidance, LTOWVS – Long-Term vs Short-Term Orientation and IVR – Indulgence vs restraint (42). In Hofstede´s model, each nation has a unique combination of these six dimensions, reflecting stable cultural values of the society (42,43).

Our culture has an impact on our actions and feelings and shapes what we value in health care (19,44–46). Some of these values may be similar across cultures or nationalities. For example, in a study conducted in eight countries, the statement ´during the consultations a GP should have enough time to listen, talk and explain to me´ was ranked very/most important by 85-93% of the respondents (19). In contrast, the statement ´it should be possible to see the same GP at each visit´ was ranked rather important in Norway (rank 6 of 38) and remarkably less important in the UK (rank 28 of 38) (19).

To some extent, Hofstede´s dimensional model has been applied to health care research. For instance, Power Distance is defined as the extent to which the less powerful members of institutions and organisations within a country expect and accept that power is distributed unequally (42). In terms of health care, in countries with a high Power Distance, consultations are shorter and more controlled by doctors, doctors and patients have fixed roles (47), and doctors prescribe more antibiotics, perhaps as a fast solution (48).

Individualism versus Collectivism is defined by the cultural emphasis on either an individual or a society (42). In terms of health care, in an individualistic country, the physicians show more affective behavior, roles of doctors and patients are more flexible (47) and doctor-patient responsibilities are seen as less appreciated (49).

Masculinity vs Femininity is defined by gender roles in the culture: whether they are clearly distinct (masculine) or overlap (feminine) (42). In terms of health care, the Masculinity/Femininity dimension explained 64% of biomedical information exchange in one study. In more feminine countries, there was a lot of question-asking, by both doctor and patient, and much biomedical information exchange. Furthermore, physicians were less satisfied with their jobs, which was actually against the expectations. (47)

Uncertainty avoidance is defined as the extent to which the members of a culture feel threatened by ambiguous and unknown situations (42). In terms of health care, in countries with strong uncertainty avoidance, physicians were less satisfied with their jobs, had less eye contact with patients and were less open to patients (47), and prescribed more antibiotics (48).

Long-Term vs Short-Term Orientation reflects the cultural way of focusing either on the future or the past and the present (42). In terms of health care, there are no publications about the relation between this cultural dimension and doctor-patient roles or doctor behaviour.

Indulgence vs Restraint reflects the cultural appreciation of enjoying life and having fun at one pole and conviction and strict social norms at the opposite pole. The Indulgence dimension is associated with higher optimism and better subjective health in cross-national surveys (42). High Indulgence is associated with lower death rates from cardiovascular diseases, even after controlling for national differences in wealth (42). In countries with higher Indulgence, patients appreciate more doctor-patient roles and responsibilities (49).

2.4 Evaluating and measuring quality in health care

´In the last 30 years, research has demonstrated that quality can be measured [...], that quality varies enormously [...], that where you go for care affects its quality far more than who you are [...], that improving quality of care is, while possible, difficult and painful […] and, in general, it has not been successfully accomplished.´ – Robert Brook, Elizabeth McGlynn and Paul Shekelle, 2000. (17)

Quality evaluation can be suggested to have started in the 1850s, when Florence Nightingale begun to pay attention to the association of basic hygiene and decreased mortality (50). In the 1910s, a few individual doctors developed follow-up systems to track the results of care. But not until the 1980s did quality measurement and improvement start in earnest in the health care industry. (51) Nowadays, these issues are probably familiar to all whose work relates to health care; however, quality measurement in health care is seldom systematic and lacks national guidelines (52,53).

Due to the multifaceted nature of quality in health care, the evaluation of quality is a complex task. Quality could be evaluated by observing such things as professional skills of personnel, patient safety or satisfaction, accessibility of services, adequacy of available resources, or fluency of treatment processes (21). The assessment of quality could include questions such as ´Who is being assessed? What are the activities being assessed? How are these activities supposed to be conducted? What are they meant to accomplish?´ (16).

Kringos et al. note that ´the quality of primary care resembles the degree to which health services meet the needs of patients, and standards of care´ (3). In general, quality evaluation could be seen as a process where the performance is measured against the desired goal (54). Furthermore, it is suggested that quality assessment could be seen as a product of the importance of a certain issue and perceived performance regarding that issue (55).

In practice, very different measurements are used to evaluate and measure health care quality. For instance, at the level of global populations, the Organisation for Economic Co-operation and Development (OECD) uses number of asthma/chronic obstructive pulmonary disease (COPD) admissions; antibiotic prescriptions; mortality after acute myocardial infarction; colon cancer survival; and obstetric trauma as indicators for quality and outcomes of care (38). On the level of a single country, in Sweden – which could be called a pioneer country in health care quality measurements – over a hundred national registries have been established and developed in order to improve health care. These are mainly disease-specific or discipline-specific and include altogether 103 registries, including amputation and prostheses, diabetes, pregnancy, and rehabilitation. The indicators vary across registries and include number of diagnoses, admissions, mortality rates, laboratory results, follow-up data, and others. (56) Moreover, on the level of individual patients, direct patient assessments, that is, patient-reported outcome measures (PROMs), could be used as a tool of quality evaluation. These could be disease-specific symptom surveys or questionnaires measuring quality of life (57).

2.4.1 Measuring quality in primary health care

The principles and definitions of health care quality apply also in the field of primary health care. According to the European Society for Quality and Patient Safety in Family Practice (EQuiP), although many of the goals of primary health care could not be measured, quality measurements are seen as a useful starting point for consistent quality improvement work in primary health care. EQuiP recommends that quality development should be integrated systematically in primary health care, and that measurements should cover the different aspects of quality. (58)

Regarding primary health care, its extensive nature places some demands on the evaluation process. During primary health care consultations, the range of problems that patients could present is unrestricted and unplanned care is a large part of care. While the focus in primary health care lies in patient-centred care, patient-centred measures should be used.

2.5 Patient-reported outcome measures (PROMs)

In this study, the focus of quality evaluation lies in the patient´s perceptions of care. To enhance these perceptions, a plethora of patient-reported outcome measures (PROMs) have been produced (59,60). A patient-reported outcome (PRO) is a patient´s direct rating or assessment of his/her health status or functional status in relation to care or treatment. Respectively, a PROM is a tool or instrument used to measure PROs. (61) PROMs are said to ´bridge the gap between the clinical reality and the patient world´, and they can serve as, for example, performance assessments, benchmark indicators, or treatment outcomes (57).

Globally, the use of PROMs has depended more on the interests of individual organisations or doctors than on being systematic (52). However, PROM databases

(60,62), national programs (56,63,64), and initiatives (65) exist in order to support the use of PROMs.

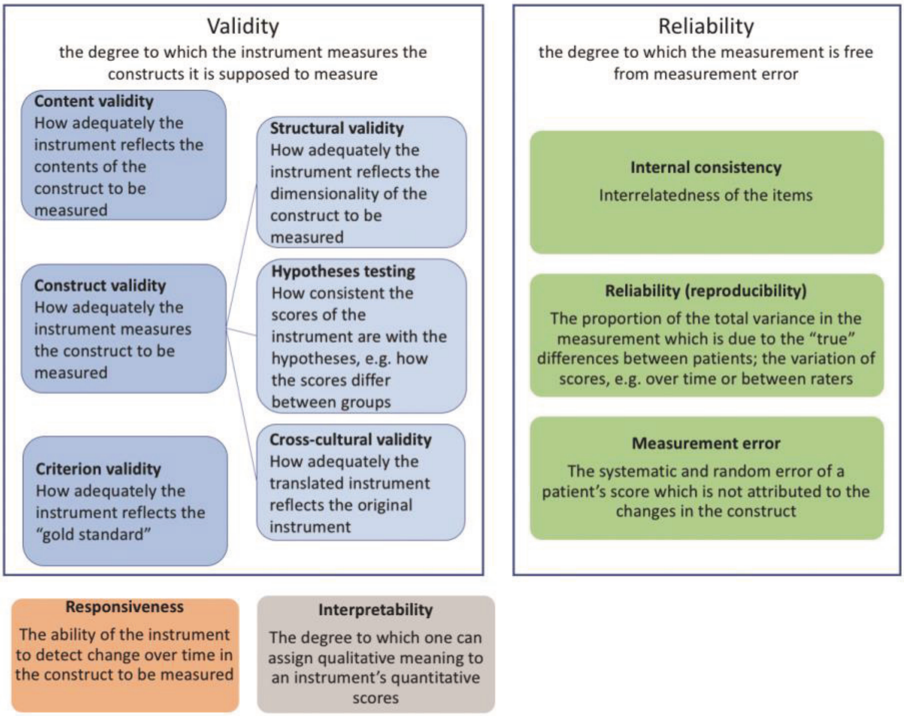
A PROM is often a patient-completed questionnaire (61). The form of a PROM can be anything from a brief one-question survey to a complicated, multi-item questionnaire (52). Furthermore, PROMs can be either generic or disease-specific. Generic PROMs consider general aspects, such as quality of life or severity of pain, whereas disease-specific PROMs evaluate symptoms and impacts of a specific condition (52). Generic PROMs are considered less responsive and sensitive than disease-specific PROMs, but generic PROMs can provide information on multiple domains of a patient´s health (66). Considering the comprehensive nature of primary health care, generic PROMs may serve better in that context (67).

Single-item measures refer to measurements containing only one question. Traditionally, single-item measures are used to measure global concepts, such as pain (68), working ability (69), or quality of life (70,71). The single-item measurements can be answered quickly, and they require little space on a survey form. Use of single-item measures is suggested to be appropriate if the concept to be measured is sufficiently specific and unidimensional rather than multidimensional (68,72).

2.6 Validity and Reliability of the PROMs

Measurements are needed to evaluate quality; to evaluate the measurements, the concepts needed are validity and reliability. These concepts are complex: they have several definitions and interpretations that are often used interchangeably (73). To improve this situation, the international COnsensus-based Standards for the selection of health Measurement INstruments (COSMIN) committee has developed a consensus taxonomy for defining the psychometric properties of patient-reported outcome (PRO), or, more specifically, health-related patient-reported outcome (HR-PRO) measurements (74,75).

According to the COSMIN Taxonomy, the evaluation of an HR-PRO measurement can be divided into three domains: validity, reliability, and responsiveness (74,75). Figure 2 presents the different domains of validity and reliability that have been adapted from the COSMIN Taxonomy (74,75) and the COSMIN Checklist for assessing the methodological quality of studies on measurement properties of health status measurement instruments (76,77). Validity refers to the degree to which the instrument measures the construct it is supposed to measure. Reliability refers to the degree to which the measurement is free from measurement error. Responsiveness is defined as the ability of the instrument to detect change over time in the construct to be measured. Furthermore, interpretability is defined as the degree to which one can assign qualitative meaning to an instrument's quantitative scores. (74,76) In addition to these concepts is acceptability, which addresses how acceptable the instrument is for the respondents to complete (59). In this study, the focus lies in validity and reliability.



Validity
the degree to which the instrument measures the constructs it is supposed to measure

Content validity
How adequately the instrument reflects the contents of the construct to be measured

Structural validity
How adequately the instrument reflects the dimensionality of the construct to be measured

Construct validity
How adequately the instrument measures the construct to be measured

Hypotheses testing
How consistent the scores of the instrument are with the hypotheses, e.g. how the scores differ between groups

Criterion validity
How adequately the instrument reflects the "gold standard"

Cross-cultural validity
How adequately the translated instrument reflects the original instrument

Reliability
the degree to which the measurement is free from measurement error

Internal consistency
Interrelatedness of the items

Reliability (reproducibility)
The proportion of the total variance in the measurement which is due to the "true" differences between patients; the variation of scores, e.g. over time or between raters

Measurement error
The systematic and random error of a patient's score which is not attributed to the changes in the construct

Responsiveness
The ability of the instrument to detect change over time in the construct to be measured

Interpretability
The degree to which one can assign qualitative meaning to an instrument's quantitative scores

Figure 2. Domains of validity and reliability, adopted from the COSMIN Taxonomy by Mokkink LB, Terwee CB, Patrick DL, et al. (74)

2.6.1 Validity

According to COSMIN Taxonomy, validity refers to the degree to which the instrument measures the construct it is supposed to measure. Validity is divided into three subdivisions: content validity, construct validity and criterion validity (74–76).

Content validity refers to how adequately the measurement reflects the contents of the concept to be measured. It includes face validity, which reflects the ´first sight´

impression of the measure. Content validity refers to relevance and comprehensibility of the construct to be measured. The COSMIN committee has also developed consensus criteria for content validity, which include, for example, ratings of item relevance and response option appropriateness. (78)

Construct validity indicates the ability to measure the construct of the concept to be measured. It consists of three subdivisions: structural validity, hypothesis testing and cross-cultural validity. Structural validity includes the ability to enhance all the dimensions of the construct. (74–76) Statistically, factor analysis is a commonly used method for assessing structural validity. Hypothesis testing denotes whether the instrument scores are discriminative across groups or whether the magnitude and direction of the score differences are consistent with a priori formulated hypotheses. (77). *Cross-cultural validity* indicates the degree to which the translated instrument reflects the original instrument (74,75).

Furthermore, *criterion validity* reflects the relationship between the instrument and “the gold standard” of the construct. (74,76) Depending on the scales of the gold standard and the challenger instrument, correlation calculations or such methods are used when assessing criterion validity. The COSMIN committee has agreed that no gold standard instruments exist in the field of HR-PROs, except when comparing a shortened version to an original one (77).

2.6.2 Reliability

Reliability refers to the degree to which the measurement is free from measurement error. In COSMIN taxonomy, reliability includes internal consistency, reliability and measurement error (74,76). *Internal consistency* reflects the interrelatedness of the measurement items. To determine this, reliability coefficients, such as Cronbach´s alpha, are calculated (79). *Reliability* reflects the measurement´s ability to detect change. This change could occur over time (called also test-retest reliability or reproducibility) or between assessors (either intra-rater reliability, i.e. ratings made by the same assessor in different occasions, or inter-rater reliability, i.e. ratings made by different assessors on the same occasion). Depending on the measurement scale, the comparison of means in baseline and retest or Cohen´s kappa values (total agreement between baseline and retest) are used when assessing test-retest reliability. In addition, *measurement error* includes systematic and random error that are independent from the changes in the measured construct. (74,76)

2.7 Patient Enablement

Patient enablement is a concept used to reflect one aspect of health care quality. It is defined as the patient's ability to understand and cope with illness and life following a consultation with a general practitioner (GP). This concept was created in the late 1980s in the United Kingdom (UK) in a study assessing GP work and quality of care. Among other issues, that study resulted in the development of the concept of patient enablement and a PROM called the Patient Enablement Instrument. (7)

In the literature considering patient enablement, the focus has centred more on using it as a quality measurement rather than defining the concept (80). Nevertheless, a few definitions exist. Enablement is seen as ´an intervention by which the health care provider recognises, promotes and enhances a patient's ability to manage their own health´ (81). One review suggests that ´the attributes of the enablement concept included: contribution to the therapeutic relationship; consideration of the person as a whole; facilitation of learning; valorisation of the person's strengths; implication and support to decision making; and broadening of the possibilities´ (82).

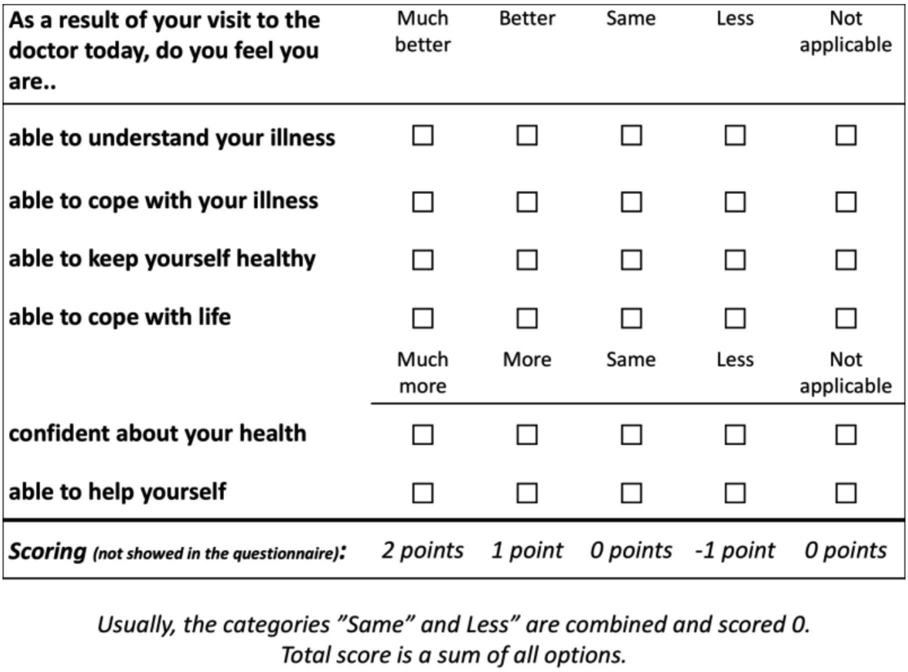
Another perspective on patient enablement is to observe it through the concept of empowerment. In the field of health care, empowerment is defined as a process in which the patient develops skills, knowledge, and confidence in health-related decisions (83). Empowerment and enablement are seen as parallel concepts (84). Nonetheless, empowerment is considered an educational process, while enablement, which includes managing and coping with illness, is more comprehensive (80). Empowerment could be achieved by the patients themselves (85), whereas enablement is regarded as a result of consultation (7,86,87). It is suggested that enablement results from individual empowerment (80,88).

2.7.1 The Patient Enablement Instrument

The Patient Enablement Instrument (PEI) is the original instrument measuring enablement. The PEI is a six-item questionnaire addressed to a patient immediately after a consultation (7). This instrument is suggested to be a good generic PROM (7,87,89). The development process of the PEI included a literature review, expert discussions, patient interviews, and two pilot studies (7).

The PEI is introduced in Figure 3. The instrument produces a sum score called the PEI score, which could be between 0 and 12. A higher score reflects higher enablement. However, there is no clear consensus on which score reflects the desirable degree of enablement. The PEI developers have suggested that a PEI score higher than 6 points would reflect ´high´ enablement (7). It should be noted that the PEI asks the patient to assess the change in feelings of enablement as a result of the doctor´s appointment.

The PEI has been applied in several countries, including Austria, Belgium, Canada, China (Hong Kong), Croatia, Finland, Germany, Japan, the Netherlands, Poland, the United Kingdom, Slovenia, Switzerland and Sweden (90–98). The perceptions of patient enablement seem to differ across countries, when comparing separate studies: the mean PEI score has varied from 3.0 in the UK (88) to 7.2 in Slovenia (98). However, there is only one study directly comparing the PEI scores across seven countries: in that study, the mean PEI score was lowest (3.9) in Sweden, average (5.5) in the UK and highest (7.2) in Slovenia (98).



As a result of your visit to the doctor today, do you feel you are..	Much better	Better	Same	Less	Not applicable
able to understand your illness	☐	☐	☐	☐	☐
able to cope with your illness	☐	☐	☐	☐	☐
able to keep yourself healthy	☐	☐	☐	☐	☐
able to cope with life	☐	☐	☐	☐	☐
	Much more	More	Same	Less	Not applicable
confident about your health	☐	☐	☐	☐	☐
able to help yourself	☐	☐	☐	☐	☐
Scoring** (not showed in the questionnaire)**:	*2 points*	*1 point*	*0 points*	*-1 point*	*0 points*

Usually, the categories "Same" and Less" are combined and scored 0.
Total score is a sum of all options.

Figure 3. The Patient Enablement Instrument (PEI) with scoring, adapted from Howie JG, Heaney DJ, Maxwell M (7)

Aspects of validity and reliability of the PEI have been studied in several previous studies (7,87,92,93,95,97,99–101). Information of content validity of the PEI is reported only in few studies, either suggesting good content validity (92), or a lack of face validity for some patients (101). In terms of construct validity, the PEI seems to measure different outcomes compared to patient satisfaction instruments (87,93,102,103) and discriminate across groups (92). Successive translation processes and uses across countries (92–95,97,99) indicate good cross-cultural validity.

Considering reliability, the internal consistency of the PEI has been reported to be high (7,81,86,87,92,93,95,98). The results regarding test-retest reliability of the instrument are contradictory, with either a minimal change over time (92,96) or lower scores in the retest compared to the baseline (95,97,100).

Despite the volume of research on the psychometric properties of the PEI, there are only a few studies on the PEI in the Nordic countries (94,95). Furthermore, to our knowledge, no study evaluates validity and reliability of the PEI in the Finnish context.

All the PEI items are designed to measure one underlying concept. Therefore, patient enablement could be a potential concept for single-item measuring. Single-item measures are suggested to be suitable for unidimensional, global concepts (68). However, there are no publications concerning measuring patient enablement with a single question.

2.7.2 Factors that associate with enablement

Earlier studies have shown that several factors are associated with patient enablement. These factors could be divided into patient, consultation and system factors (88). Patient factors include, for example, patient characteristics, expectations and skills; consultation factors include the environment, actions and perceptions of the consultation; and system factors include organisational characteristics, such as the structure of the health care system.

Several patient characteristics may have an effect on patient enablement, but the results are inconsistent among studies. The results considering patients´ ages suggest higher enablement among either younger (90,92,104) or older patients (86,91,93,105,106), or no effect at all (95). Such results apply also to gender: results indicate either no effect (95) or higher enablement among female (104) or male patients (86,90). Furthermore, socioeconomic features, such as patient´s education or household income, have been taken into account in two large studies with no significant effect on enablement (88,90). One study has suggested an association between patients´ higher educational level and higher enablement (91).

Patient´s language skills and ethnicity seem to associate with enablement. Consulting with their own language is reported to promote enablement (106). PEI scores tend to vary according to the patients' ethnic background: in some studies conducted in the UK, immigrants have reported higher PEI scores than natives (86,90,105,106). In one of these studies, the difference persisted after controlling for perceptions of communication (90). Behind such results, there might be some cultural mechanism we are not yet aware of.

Patient´s health status is reported to be associated with enablement. Having one (90,107) or several chronic diseases (88), or a lower self-perceived health status (88,91,104) has been associated with lower enablement in previous studies.

In addition to patient characteristics, patient expectations towards the consultation can modulate the experience and hence affect the outcomes. When expectations are met during the consultation, it seems to have either a positive influence on enablement (108) or no effect (109). In addition, since previous negative experience is suggested to have an impact on patient satisfaction (110), it could be hypothesised to also affect patient enablement, but evidence is lacking.

Consequent to patient factors, multiple consultation factors occur that might have an effect on enablement. The length of the consultation is one of the most studied factors associated with patient enablement, with longer consultations leading to higher enablement (7,86,99,105,111–113). Likewise, the experience of sufficient time spent for a consultation seems to associate with higher enablement (105). In addition, the reason for the consultation could have an effect on patient enablement. Having an appointment because of a longstanding problem (88) or complex reasons has been associated with lower enablement (7,112).

In previous studies, basic GP characteristics like age and gender have shown either partial (91) or no effect (90) on patient enablement. Instead, the doctor-patient collaboration, as a major component of a consultation, seems to contribute strongly to patient enablement. It is suggested that there are ´high-enablers´ and ´low-enablers´ among GPs (86). Patients´ positive perceptions about doctor-patient communication (90,105,114,115), doctor's empathy (88,116), partnership (114), or trust with the doctor (117) are found to associate with higher enablement, as well as higher patient satisfaction (86,102,107). Evaluations of doctor´s stronger patient-centredness have either suggested higher enablement (99,115), or had no impact (89). Similarly, a patient`s positive perception of involvement in decision-making has increased enablement (98), whereas GP education towards shared decision-making did not change enablement in one study (100).

Regarding system factors, organisational structure, such as remuneration and accommodation of GPs, relates probably to patient outcomes. In one British study, GPs in single-handed practices had higher proportions of higher-enabled patients (86). GPs´ workload may affect their ability to enable patients, but the results are contradictory (91,107). It should be highlighted that better continuity of care and especially a patient´s feelings about knowing the doctor, seems to support higher enablement (86,90,91,94,99,114,118,119). In addition, longer waiting times to appointments are suggested to associate with lower enablement (113).

It could be hypothesised that several other structural features in different health care systems might have an impact on enablement. In the same way, different cultural mechanisms may have an effect on patients´ perceptions of enablement. However, most of the studies are conducted in different countries, and there are only few international comparisons available (96); besides, there are none that take into consideration the impacts of differences between systems or cultures. In general, even with multivariable models adjusted for several factors, the majority of the variance of enablement has remained unexplained (90,115). This may indicate that behind the process of achieving enablement in consultations, some yet unknown mechanisms exist.

2.7.3 Patient enablement in Finland

There is only limited information about enablement in the Finnish context. One doctor´s thesis included enablement as a minor point of view on quality in GP appointments (94). The study data were collected in the regions of Satakunta and Southwest Finland in the year 2000. The study part, assessing patient enablement, was a cross-sectional survey among public health care centre GPs and their patients. It included responses from 81 GPs and 1373 patients altogether. In that study, the PEI scores were rather low (overall mean of the PEI subgroups was 3.0). In addition, feeling the doctor as the respondent´s ´own doctor´ and having a positive perception of the doctor´s communication were associated with higher enablement scores. (94)

2.7.4 Patient enablement in different health care settings

To our knowledge, there are no publications that link patient enablement and health care setting or system features. It could be hypothesised that aweaker primary care structure could reduce expectations towards GPs and thus lead to lower enablement.

Furthermore, in gatekeeping countries, the GP is usually the first contact in health care. This could promote continuity of care and thus enablement.

The PEI was developed in the UK, where GP consultation times are short (5–8 minutes) (7,86,106,116) and primary health care is maintained mainly by smaller (three GPs or less) practices with self-employed GPs (28). In Finland, the public health care system is organised by the municipalities, which provide services in multidisciplinary health care centres/stations with several GPs. GPs working in the public sector are practically always salaried. Finnish GP appointments are usually longer than in UK, from 15 to 30 minutes (34), and cover several issues. In the UK, the number of GPs per 100,000 population varies from 40 to 84, whereas in Finland it varies between 45 and 65, depending on area (28). These differences between the British and Finnish systems raise the question of whether the PEI would be a valid and reliable instrument when used in a different health care system with longer consultation times and different content.

2.7.5 Patient enablement end cultural dimensions

In an analysis of the QUALICOPC data for Switzerland, enablement was linked with the linguistic area (107). Otherwise, there are no publications that link patient enablement with cultural differences. It could be hypothesised that cultural differences, particularly in doctor-patient relationships, might have an effect on enablement. In some countries, doctors are seen more as authorities, whereas in others doctors are seen more as equals. Furthermore, in cultures with a stronger emphasis on individual rather than societal values, patients might be more difficult to satisfy, and this might lead to lower enablement.

2.8 Summary of the literature

In conclusion, the quality of health care could be seen to emerge from a health care performance that fulfilled the needs and demands set to it, reflecting the values of the assessors of the context in question. Quality could be measured; the methods are variable and dependent on the chosen perspective. When measuring quality, we need to confirm that the instruments we use are valid and reliable.

In terms of quality measurement in primary health care, the unlimited and comprehensive nature of primary health care demands generic approach. Patient enablement and specifically the Patient Enablement Instrument (PEI) is a tool to achieve this kind of approach. There are several studies about the psychometric properties about the PEI, but only a few conducted in the Nordic countries and none that study this issue in Finnish primary health care. In addition, patient enablement could be a suitable concept for measuring with a single question, but there are no publications available on that topic.

Several factors are known to associate with patient enablement, but the mechanisms behind the enablement process remain widely unknown. In particular, we lack knowledge about the impact of different health care systems or cultural dimensions on patient enablement.

3 RESEARCH QUESTIONS

1) How is the validity and reliability of the Patient Enablement Instrument in terms of content and construct validity, internal consistency, test-retest reliability, and measurement error, among Finnish health care centre patients?

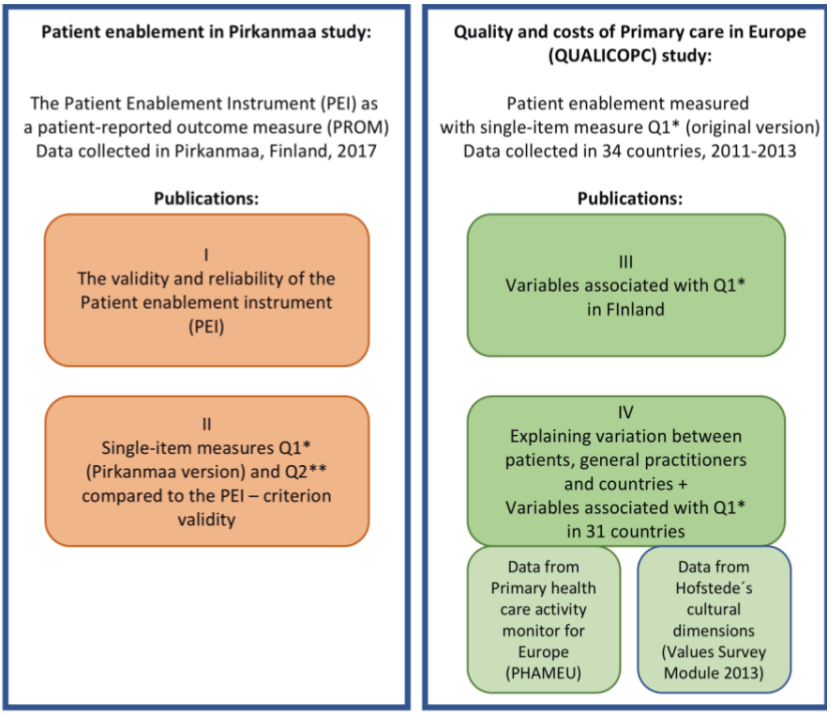
2) Could patient enablement be measured with a single-item question, considering content, construct, and criterion validity, and reliability?

3) Which factors are associated with patient enablement among Finnish health care centre patients, measured using a single-item measure?

4) Which factors explain variation in patient enablement, measured using a single-item question, in the international context – in particular, considering differences in health care systems and cultural dimensions?

4 MATERIAL AND METHODS

The material of this study consists of two datasets. Firstly, data from the Patient Enablement in Pirkanmaa study, collected in 2017, were used in Publications I and II. Secondly, the data derived from international Quality and Costs of Primary Care in Europe (QUALICOPC) were used in Publications III and IV. These data were collected between 2011 and 2013. The publications of this study and the datasets used in this study are presented in Figure 4.



***Q1 Pirkanmaa version:** "After this visit, I feel I am able to cope better with my symptom/illness than before the visit
– I totally agree / I partly agree / I partly disagree / I totally disagree / not applicable".
Q1 original version: After this visit, I feel I am able to cope better with my health problem/illness than before the visit – yes / no / don´t know

****Q2**: "As a result of your visit to the doctor today, do you feel you are able to cope with your illness
– much better / better / same / less / not applicable".

Figure 4. The construction of this study: the publications of this study and used datasets

4.1 Patient Enablement in Pirkanmaa (I and II)

The main aims of the Patient Enablement in Pirkanmaa study were 1) to study the reliability and validity of the PEI in a Finnish health care centre context and 2) to explore whether patient enablement could be measured by a single-item measure.

4.1.1 The study design

The design of the Patient Enablement in Pirkanmaa study is presented in Figure 5. The study consisted of three parts:

1) A pilot study that included interviews with patients who filled in the study questionnaires. The purpose of the pilot study was to assess the content validity of the study questionnaires.

2) A questionnaire study with questionnaires (A) before and (B) after the appointment with a GP. The purpose of the questionnaire study was to collect quantitative data in order to assess the construct validity, criterion validity, and internal consistency of the PEI and the single-item measures.

3) A telephone interview that was conducted two weeks after the appointment. The purpose of the telephone interview was to assess the test-retest reliability of the PEI and the single-item measures.

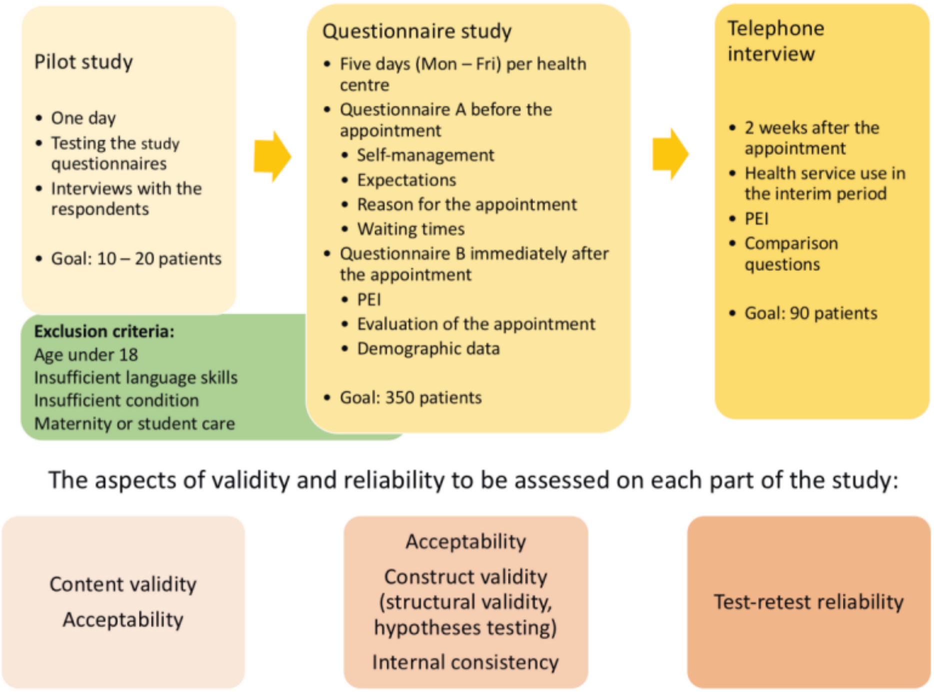


Figure 5. The design of the Patient enablement in Pirkanmaa study: the three parts of the study and the aspects of validity and reliability assessed in each part

4.1.2 The questionnaire development process

The questionnaire development process was based on four main principles: 1) to include questions useful for the validation process of the PEI questionnaire, 2) to include all relevant topics (e.g. patient expectations, self-management/empowerment before the appointment), 3) to maintain clarity and good applicability of the questionnaire form and 4) to keep the length of the questionnaire reasonably short to minimise drop-outs.

The study questionnaires were designed after exploring various existing questionnaires and studies. These are presented in Table 1. Unfortunately, a literature search revealed a very limited number of validated questionnaires or single-item measures in Finnish, considering the relevant topics. This was also the international situation. For example, in a systematic review including 30 empowerment studies, 38 different definitions and 19 different questionnaires were found; many of these questionnaires were poorly validated (120). Thus, the selection of questions was based on careful review and agreement between the researcher and the supervisors.

It was decided to be administer the study questionnaires both before (questionnaire A) and after (questionnaire B) an appointment. This decision was based on assumption that the patient´s perception of issues such as self-management assessments or even the reason for the consultation might be changed by actually having the consultation. A similar approach has been used in two previous enablement studies (7,114). In addition, questionnaire C was used to collect the the contact information and the acceptance to participate the telephone interview. Finally, questionnaire D was used during the telephone interview two weeks after the appointment. All the questionnaires in Finnish can be found in the Appendix section.

Questionnaire A included the patient´s perceptions of self-management and empowerment before the appointment, patient´s expectations about the upcoming appointment, patient´s reason for the appointment and questions about waiting times for the appointment. Due to the potentially limited time before the appointment, questionnaire A was condensed into two pages, a single two-sided A4 sheet.

Questionnaire B included information about previous visits to the health centre and the GP in question, name of the GP (to enable linking GP characteristics with patient data), the PEI questionnaire, patient´s assessments of the recent appointment and questions about demographic factors (age, gender, education, state of health, etc.). The assessment of the recent appointment included five topics: the course of the appointment, doctor-patient communication, doctor´s attitude towards the patient, patient satisfaction and the usefulness/benefit of the appointment. The main purpose of this section was to test the discriminative properties of the PEI (i.e., to study whether enablement is different from, e.g., patient satisfaction or patient´s perceived benefit) and to study potential associations (e.g. the association between doctor-patient-communication and enablement). This section also included Q1, the single-item measure to compare to the PEI. Questionnaire B consisted of three A4 pages and was relatively fast to fill out (a few minutes).

Questionnaire C included the consent to a telephone interview and the contact information of the participant. Questionnaire D collated information on health service use in the interim period, the PEI, Q1, and comparison questions about patient satisfaction, benefit, involvement, and instruction evaluation.

Table 1. A list of existing questionnaires and separate studies, used as background and inspiration in the questionnaire developing process in the Patient Enablement in Pirkanmaa study.

Name of the questionnaire (if any)	Theme	Reference
Cancer Empowerment Questionnaire, based on Netherlands Empowerment Questionnaire	empowerment, self-management, collaboration with professionals	(121)
Chinese Diabetes Empowerment Process Scale (C-DEPS)	empowerment, collaboration with professionals	(122)
EUROPEP	patient satisfaction, doctor-patient communication	(123)
Health Care Climate Questionnaire (HCCQ-D)	doctor-patient partnership, autonomy support	(124)
Health Education Impact Questionnaire (HEI-Q)	self-management	(125)
Health Care Empowerment Inventory	empowerment	(126)
Korean Health Empowerment Scale (K-HES), based on Diabetes Empowerment Scale (DES)	empowerment, self-management	(127)
Patient Activation Measure (PAM)	self-management	(128,129)
Patients´ expectations questionnaire (PEQ)	patient expectations, patient satisfaction, doctor-patient communication	(130)
QUALICOPC	patient satisfaction, doctor-patient communication, patient enablement	(131)
Review of 30 articles	empowerment	(120)
Seeing the doctor	communication	(132)
Self-Management ability (SMAS-30)	self-management	(133)
Self-Management Screening (SeMaS)	self-management	(134)
Service User Psychological Empowerment Scale (SUPES)	empowerment, self-management, collaboration with professionals	(135)
-	empowerment	(136)
-	patient satisfaction, doctor-patient communication	(137)
-	patient expectations, doctor-patient communication, doctor-patient partnership	(114)
-	patient satisfaction	(138)
-	health confidence, self-rated health	(139,140)
-	empowerment	(141)

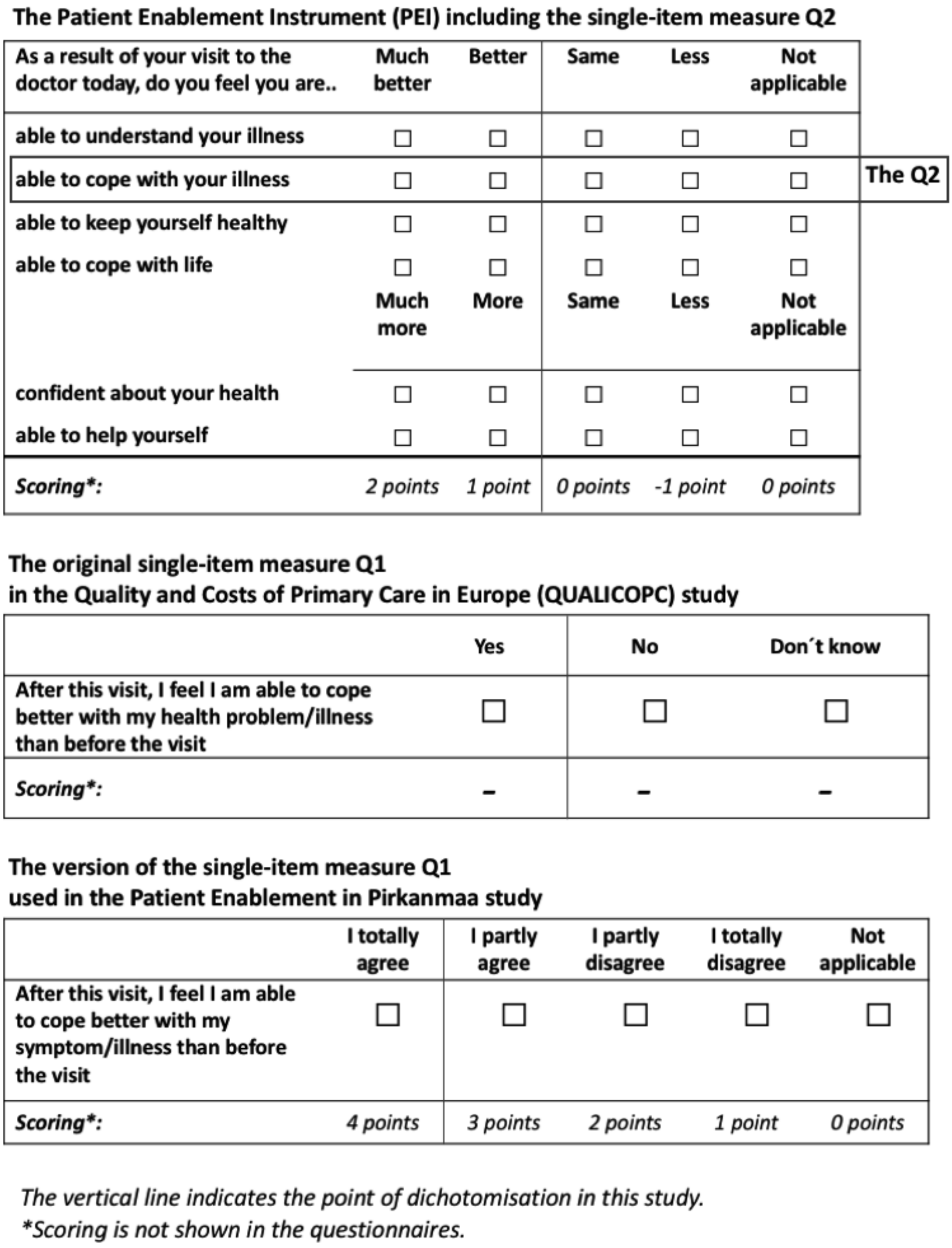
4.1.3 The measurements (PEI, Q1 and Q2)

The PEI and the single-item measures Q1 and Q2 used in this study are presented in Figure 6. The PEI questionnaire includes six questions that inquire about the patients´ perceptions of their ability to 1) understand their problem(s)/illness(s), 2) cope with their problem(s)/illness(es), 3) keep themselves healthy, 4) cope with life, 5) be confident about their health, and 6) help themselves (7).

The PEI questionnaire was formally back-translated into Finnish in 2014 as part of a larger study (94). The translation was evaluated by our research team and by a professional translator naive to both versions of the PEI. The translation was concluded to be faithful to the original.

The scale in the PEI is transitional, reflecting changes in patients´ feelings as a result of the appointment. The scale options are ´much better/more´ (two points), ´better/more´ (one point), ´same´ (zero points) or ´less´ (minus one point), and ´not applicable´ (zero points). The ´less´ option is usually combined with the ´same´ option, scoring zero points. Finally, all points are summed up to form a PEI score, ranging from zero to twelve. The PEI score can be calculated when at least three of the six questions have been answered – the empty options score as zero (7). In this study, we wanted to explore whether the negative option should be preserved in the questionnaire, as in the original study setting (7) and one previous study (92). The combination of the option categories ´same´ and ´less´ has been criticised as confusing (92,101).

There is no clear consensus on what PEI score is considered ´good´ or ´adequate´. A PEI score of more than six points is suggested to reflect ´high´ enablement, and this score was used as a cut-off in the original study (7). Nevertheless, the transitional nature of the PEI gives room for different interpretations: any change towards positive (i.e. even one point) could be regarded as an increase of enablement. Thus, both a PEI score of zero (90) and the mean score of the study population at the time (88) have been used as cut-offs in earlier studies.



The Patient Enablement Instrument (PEI) including the single-item measure Q2

As a result of your visit to the doctor today, do you feel you are..	Much better	Better	Same	Less	Not applicable	
able to understand your illness	☐	☐	☐	☐	☐	
able to cope with your illness	☐	☐	☐	☐	☐	The Q2
able to keep yourself healthy	☐	☐	☐	☐	☐	
able to cope with life	☐	☐	☐	☐	☐	
	Much more	More	Same	Less	Not applicable	
confident about your health	☐	☐	☐	☐	☐	
able to help yourself	☐	☐	☐	☐	☐	
Scoring:*	*2 points*	*1 point*	*0 points*	*-1 point*	*0 points*	

The original single-item measure Q1 in the Quality and Costs of Primary Care in Europe (QUALICOPC) study

	Yes	No	Don´t know
After this visit, I feel I am able to cope better with my health problem/illness than before the visit	☐	☐	☐
Scoring:*	–	–	–

The version of the single-item measure Q1 used in the Patient Enablement in Pirkanmaa study

	I totally agree	I partly agree	I partly disagree	I totally disagree	Not applicable
After this visit, I feel I am able to cope better with my symptom/illness than before the visit	☐	☐	☐	☐	☐
Scoring:*	*4 points*	*3 points*	*2 points*	*1 point*	*0 points*

The vertical line indicates the point of dichotomisation in this study.
**Scoring is not shown in the questionnaires.*

Figure 6. The Patient Enablement Instrument (PEI), adapted from Howie JG, Heaney DJ, Maxwell M (7); the single-item measure Q1, adapted from Schäfer WLA, Boerma WGW, Kringos DS, et al. (131); and the version of the single-item measure Q1 used in the Patient Enablement in Pirkanmaa study

In this study, the PEI was compared to two single-item measures (see also Figure 6), called Q1 (Pirkanmaa version) and Q2. The measures were:

Q1: ´After this visit, I feel I am able to cope better with my symptom/illness than before the visit.´ Possible answers: ´I totally agree / I partly agree / I partly disagree / I totally disagree / not applicable´.

Q2: ´As a result of your visit to the doctor today, do you feel you are able to cope with your illness…´ Possible answers: ´much better / better / same / less / not applicable´.

The original version of Q1 was included as one of the quality measurements in the Patient Experience questionnaire in the Quality and Costs of Primary Care in Europe (QUALICOPC) study. The inspiration for this question was the PEI questionnaire (131). This question has been used to explore factors associated with enablement in Switzerland (107). It had not undergone a strict validation process but represented an "expert opinion" (131)

The wording and scoring of Q1 were slightly changed from the original Finnish QUALICOPC questionnaire. Firstly, we changed ´health problem/illness´ (originally translated as ´vaiva/sairaus´) to ´symptom/illness´ (´oire/sairaus´). Secondly, we used a different synonym in Finnish for ´to cope´ (´pärjätä´ instead of ´selviytyä´). With these two changes, we intended to use more common language and thus greater relevance to a heterogenous health care centre patient population. Thirdly, to evaluate whether a four-point Likert-scale would be more relevant than the original three-item scale (´yes / no / don't know´), the scale was changed. The scale options in this study were: ´I totally disagree / I partly disagree / I partly agree / I totally agree / not applicable´. Simple scoring of 0 to 4 points was used in the statistical analyses.

Q2 is already part of the PEI questionnaire and it remained in this study as it was originally. Initionally, the purpose of this study was to explore only Q1, but during the research process, it became evident that Q2 had potential properties. However, Q2 is one of the three PEI items that, according to the developers of the PEI, have the greatest face validity and are less vulnerable to confounding (90). Moreover, those three items are reported to have high internal consistency and a high level of correlation with the whole six-item PEI (89). Consequently, Q2 was chosen for inclusion in this study.

4.1.4 Statistical power calculations

With very limited information on PEI scores among Finnish patients, the statistical power calculation was based on several assumptions. Works by Kuusela (94), Lam (142) and Rööst (95) were used as the basis of those assumptions because they offered numerical data of distribution, deviation and variance of PEI scores.

The power calculation was executed using statistical significance 0.05, statistical power 0.80 and deviation of scores 3.3 (maximum). Thus, the sample size to detect a difference of one point in PEI scores at a certain point in time was 172 + 172 patients, so altogether 344 patients. The information about the deviation of the change of the PEI score over time was not available, but by using the same assumptions the test-retest sample size was 87 patients.

4.1.5 Data collection

The study data were collected between February and May 2017. The study was conducted in three municipalities in the Pirkanmaa district in Western Finland: Hämeenkyrö, Pirkkala, and Tampere. Hämeenkyrö is a rather rural municipality with 61% of the total area defined as a built-up area and 10,600 inhabitants in 2017(143). Pirkkala is a small-area municipality situated next to the city of Tampere, with 19,200 inhabitants in 2017. Tampere is the third largest city in Finland, with approximately 230,000 inhabitants in 2017. The population demographics of these three municipalities differ. When comparing populations under 15 years old, the percentages in 2017 were 18.1% in Hämeenkyrö, 21.0% in Pirkkala and 13.7% in Tampere. The proportions of retired people among all inhabitants in 2017 were 27.8% in Hämeenkyrö, 19% in Pirkkala and 22.5% in Tampere. (132,133)

The pilot study was performed on a single day when the researcher (ET) recruited patients in the Pirkkala health care centre to fill out the study questionnaires and to participate in a brief interview afterwards. The participants had to evaluate whether there were any inappropriate or irrelevant questions, and whether they encountered any difficulties while filling out the questionnaires. They were encouraged to speak freely at any point during the interview.

During the data collection period for the actual questionnaire study, the goal was to recruit all patients who had an appointment with a GP at the health centre over a five-day period (Monday to Friday during office hours). The researcher (ET) or research assistants tried to approach everyone who came to the waiting room of the health centres during office hours.

The exclusion criteria of the pilot and the questionnaire study parts were age under 18 years, insufficient Finnish skills, and a severity of illness preventing participation in the study. In addition, patients who had an appointment with a GP for maternity or student care were excluded. Such appointments in Finland usually consist mainly of regular health-checks and achieving patient enablement or coping with illness may not be the focus there.

All the participants were informed about the study both orally and in writing, and they gave written consent. Paper questionnaires were administered to the participants. Those who had difficulties with filling in the questionnaire (e.g. due to deteriorated vision) were assisted by the research assistants. Questionnaires included questionnaire A before the appointment and questionnaires B and C after the appointment. Questionnaires B and C were in a sealed envelope in order to ensure that those really were filled out after the appointment. All three questionnaires had the same code number so the individual responses could be linked in the data matrix.

All the participants were offered the opportunity to participate in the telephone interview two weeks after the appointment. To participate in the telephone interview, participants needed to fill out the questionnaire C with their contact information. A two week period was considered a suitable interval for the test-retest measurement when evaluating patient-reported outcomes (145). The telephone interview was chosen as the test-retest method in order to achieve better coverage in responses than a postal survey. It is reported that telephone and face-to face surveys produce similar results (146).

The researcher (ET) performed all the telephone interviews. The goal was to reach the participants 14 days after the baseline appointment. If the participant was not reached at once, 1–3 repeated attempts were performed; if the participant was still not reached, a text message reminder was sent and 1–3 new attempts were made. If the participant was still not reached, no more attempts were made. Of the telephone interviewees, those who had had an appointment with a doctor in primary or secondary care in the interim period were excluded from the analyses. This was due to the assumption that potential new interventions in the interim period could affect the later assessments.

4.1.6 The study sample

In the pilot study, 32 patients were reached during one day office hours on one day. Twenty-one patients gave their consent, and 17 patients completed the pilot study.

The mean age of the participants was 59.3 years (range 23–89) and 10 of them (58.8%) were female.

The data collection period for the actual questionnaire study took 17 days altogether (five days per health centre plus two extra days in Pirkkala). During that period, we reached 940 patients heading for a GP appointment, which was 79.3% of all patients (information derived from the patient information systems in the health care centres). We managed to recruit 546 patients to participate in the study. The patient recruitment process and division for the analyses is presented in Figure 7. The overall response rate was 67.2% (546 participants / (267 refusers + 546 participants)).

Of the 546 participants, altogether 483 patients had a completed PEI score (fewer than three options missing) and were thus included in the analyses. Furthermore, altogether 256 patients gave their consent to the telephone interview, and eventually 240 patients were reached. The point of the telephone interview varied from 11 to 22 days; the median was 15 days. Altogether 73.3% of interviews were performed 13–15 days after the baseline appointment. Of the 240 interviewees, 175 (72.9%) had a completed PEI score and no visits to any doctor in the interim period. Thus, they were included in the test-retest analyses.

Some basic information was collected from the GPs whose patients participated in the study. Altogether 34 GPs responded. The age range of the GPs were from 25 to 64 years (mean 39 years, median 37 years, and SD 11.6 years). Twenty-five (73.5%) were female. Ten (29.4%) had completed the specialisation program (9 had general practice and 1 both general practice and internal medicine) and 13 (38.2%) were in a specialisation program (11 for general practice and 2 for internal medicine). Eleven (32.4%) had no specialisation. The number of years working in a health care centre varied from 0 to 34 years, (mean 8.5 years, median 6.0 years and SD 9.3 years). The majority (78.1%) stated they enjoyed their work at the health care centre.

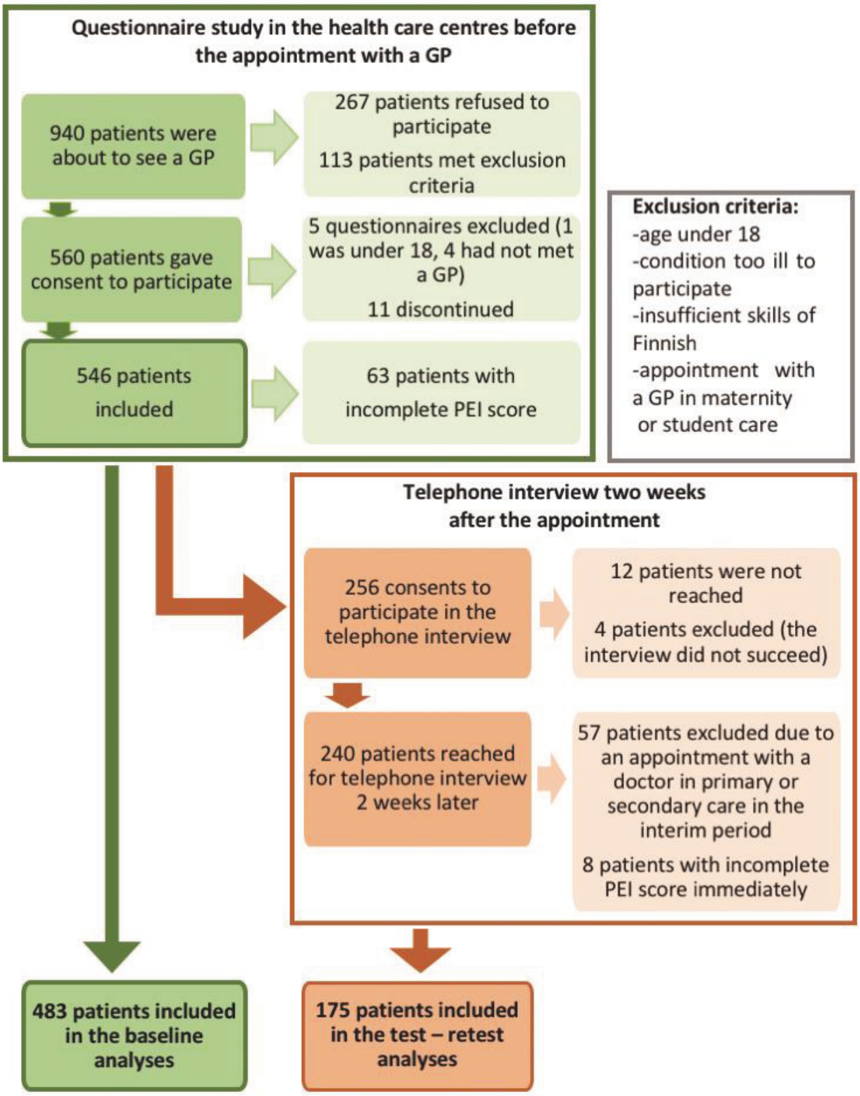


Figure 7. Recruitment of patients in the Patient Enablement in Pirkanmaa study, and division for the analyses

4.1.7 Statistical analyses

4.1.7.1 Validity and reliability of the PEI (I)

The COSMIN checklist for methodological studies (76) was used as a guideline when designing the whole study; additionally, the COSMIN Risk for Bias checklist (79) was used when writing the Publication II. In all the statistical analyses, IBM SPSS version 25 was used.

In the questionnaire study, all patients who had a completed PEI score after the appointment were included in the analysis. Completion rates, distributions, and the means of the PEI items were analysed in order to assess the acceptability of the instrument.

The structural validity of the PEI was evaluated by factor analysis, item-scale correlations and hypothesis testing. A principal component factor analysis with Varimax rotation was performed: if the instrument was unidimensional, the factor analysis should produce one factor with an eigenvalue >1, and each component should have similar factor loading. The item-scale correlations were calculated using Spearman rank correlation coefficients, with interpretation of -1/1 reflecting complete negative/positive correlation and 0 reflecting no correlation at all (147). We expected that the item-scale correlations of the PEI items should be higher than 0.7 (strong positive correlation), in order to indicate good structural validity. Consequently, hypothesis testing was evaluated by comparing the PEI to questions measuring patient satisfaction, benefit, involvement, and instruction evaluation (indicating discriminant validity), plus known group comparison. The hypotheses were: 1) correlation between the PEI score and the comparison questions would be low, in this case less than 0.4; 2) that the PEI scores would be significantly lower among patients with a non-urgent reason for consultation, more chronic conditions, and a worse state of health; and 3) the PEI scores would be similar across sex and age groups. The Mann–Whitney *U* test and the Kruskal–Wallis test were used to compare distributions across groups.

In terms of reliability, internal consistency between the questionnaire items was evaluated by counting the reliability coefficients, that is, Cronbach alphas with confidence intervals. A value >0.7 is considered adequate in general (148), and for clinical measurements, a value >0.9 is regarded as desirable (149). Reliability over time was analysed by kappa statistics. In addition, the mean PEI and comparison question scores between the questionnaire study and the telephone interview were compared by the Wilcoxon signed rank test. Finally, the standard error of measurement (SEM) was calculated with the formula: $SEM = SD\sqrt{1-r}$, where *SD* is the standard deviation of the test score and *r* is the reliability coefficient of the test, usually Cronbach's alpha, Cohen's kappa, or some similar coefficient (150).

4.1.7.2 Patient enablement with a single-item measure (II)

All the statistical analyses were performed with IBM SPSS version 25. Descriptive data were used to observe the item variation and discriminative properties of Q1 and Q2. Cross-tabulations between the PEI with different cut-offs and Q1 and Q2 were performed. Consequently, sensitivity, specificity, and predictive values for Q1 and Q2 were calculated. In terms of construct validity, Spearman correlations between Q1, Q2, the PEI, and the comparison questions were calculated.

In terms of reliability, the reliability coefficient *r* of the single-item measures was calculated with the formula $r(xy) = \sqrt{r(xx) * r(yy)}$ (72). In this formula, *r(xy)* is the correlation between variables, *r(xx)* is the reliability of variable x (in this case, the single-item measure Q1 or Q2) and *r(yy)* is the reliability of variable y (in this case, the scale measure PEI). In addition, the mean scores and Cohen kappa values for Q1 and Q2 were calculated.

4.2 The QUALICOPC study (III and IV)

In this study, the international Quality and Costs of Primary Care in Europe (QUALICOPC) data were used in order to explore factors related to patient enablement, measured by a single-item measure Q1 (original version).

4.2.1 The study design

The QUALICOPC study is aimed to evaluate primary health care systems in 31 European countries along with Australia, Canada and New Zealand. The study is funded as part of the European Commission's Seventh Framework Programme and carried out as a consortium of five research institutes from Belgium, Germany, Italy, the Netherlands and Slovenia. The study is coordinated by the Netherlands Institute for Health Services Research (NIVEL). The main purpose of the study is to evaluate the different primary health care systems across the world against criteria of quality, equity and costs, thus producing useful information for policymakers. (131)

The goal was to reach 220 GPs in each country (75 in Cyprus, Iceland, Luxembourg and Malta). Only one GP per practice could participate in the study. For each GP, the goal was to recruit nine patients to fill out the Patient Experience questionnaire and one patient to fill out the Patient Values questionnaire. (151)

Due to the collection method, the QUALICOPC data structure is hierarchically clustered: the patients are nested within GPs and GPs are nested within countries. Thus, the data forms three levels: patient, GP and country level. Since only one GP per practice is included in the study, the GP level is also the practice level. A generic structure of the collection method and data is presented in Figure 8. The figure also demonstrates an idea of variation of the variables across different levels.

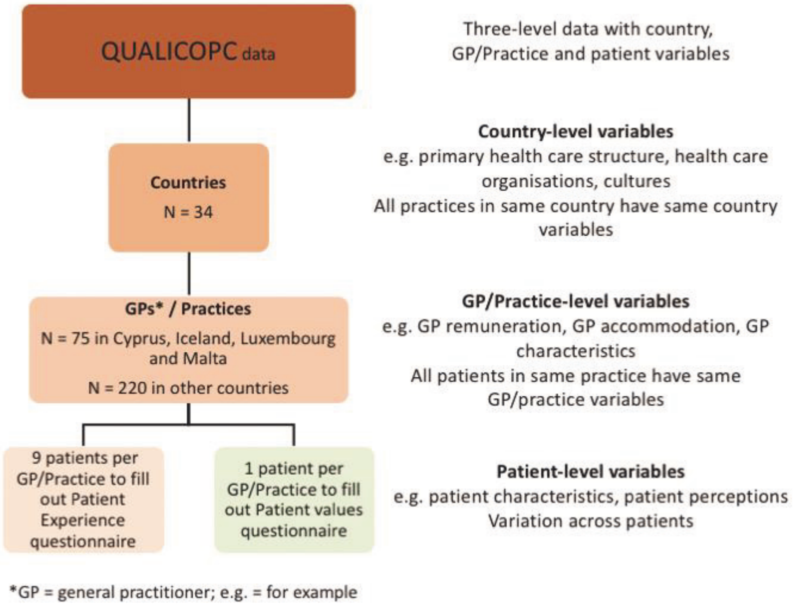


Figure 8. A concept figure of the Quality and Costs of Primary Care in Europe (QUALICOPC) study design and data structure

4.2.2 The questionnaire development process

In the QUALICOPC study framework, there are questionnaires for GPs, their patients (separate questionnaires about patient experience and patient values) and fieldworkers to ´evaluate the system, the practice and the patient´ (131,151).

The developing of QUALICOPC questionnaires is described in detail elsewhere (131). The development process consisted of four phases: a search for existing validated questionnaires, classification and selection of relevant questions, shortening of the questionnaires in three consensus rounds and a pilot survey. After an extensive literature search, 13 relevant questionnaires for GPs and 64 relevant questionnaires for patients were found; after consensus rounds and a pilot study, 60 questions for GPs and altogether 60 questions for patients were developed (41 for the Patient Experience questionnaire and 19 for the Patient Values questionnaire). (131)

In the Finnish part of the QUALICOPC study, the original questionnaires were translated from English to Finnish and finally back to English. The two versions were then compared to ensure they matched each other.

The variables used in Publications III and IV are presented in detail in the Appendix section.

4.2.3 Data collection

The data collection of the QUALICOPC study was conducted between October 2011 and December 2013 (151,152). The recruitment process for GPs varied between countries from a random sampling to mixed-method processes. Random sampling was realised in two-thirds of the countries. The response rate among GPs varied from 6% in Austria to 90% in Malta – in half of the countries, the response rate was over 30%. The study was implemented in all European Union countries except France. (152)

Altogether 7414 GPs participated the study (information from the QUALICOPC dataset). The number of patients was 69,201 (153). When compared to national statistics, the participating GPs by and large represent their national average by age and gender, with few exceptions (152).

The Finnish QUALICOPC data were collected in 2012. Invited by NIVEL, the national coordinators at Tampere University coordinated the implementation of the study in Finland. The recruitment process is presented in Figure 9. In the first stage, a random sample of physicians (n = 700) was chosen from the register of the Finnish Medical Association. Unfortunately, the response rate at this point was very low (6.7%). In the second stage, an invitation was sent to 206 GP specialist trainees registered at the University of Tampere. Again, the response rate was only 10 %. Since there were still too few participants, in the third stage, the chief physicians of health centre organisations in the Pirkanmaa Hospital District were asked to recruit GPs (1–5 per organisation, depending on the size of the population and the number of health stations). In addition, the national coordinators used personal contacts with health centre organisations in order to recruit GPs.

Ultimately, a total of 288 GPs gave a response on the GP part of the survey; among those, 139 GPs agreed on their patients´ participation as well. The patients were recruited and asked to fill out the questionnaire at the health centre immediately after the appointment with the GP. Altogether 1196 patients filled in the Patient Experience questionnaire. Two to 9 patients per GP were recruited, with a median of 9 patients and a mean of 8.6 patients. Altogether 139 patients filled in the Patient Values questionnaire.

Of the participating 288 GPs, 205 (71.2%) were female. The mean and median age was 45 years (range 25–70 years, SD 12.1 years). Information about specialisation or working years in the health centre was not included in the background information.

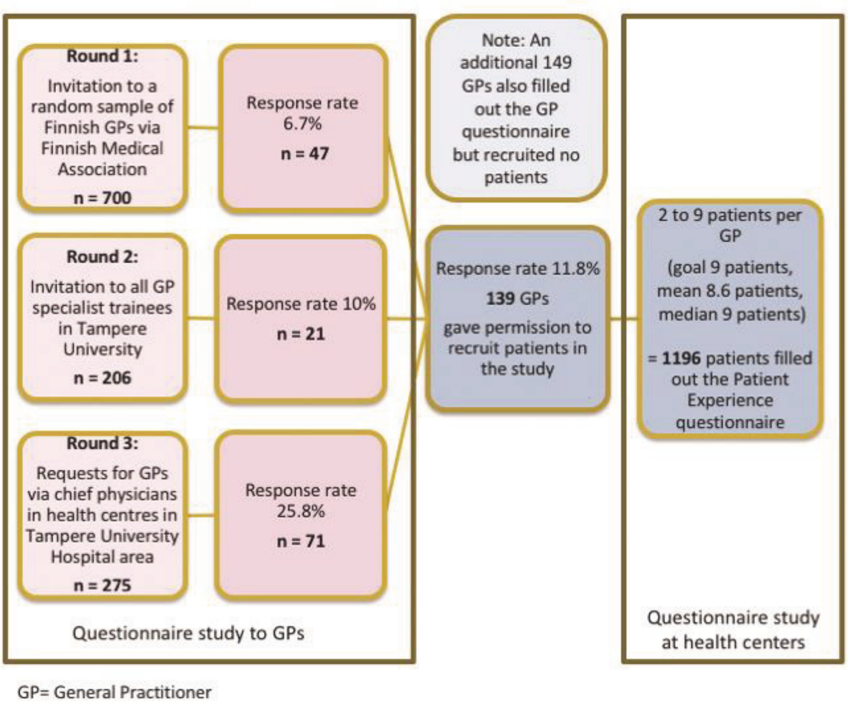


Figure 9. The recruitment process of the Finnish Quality and Costs of Primary Care in Europe (QUALICOPC) study

4.2.4 Other datasets (IV)

In Publication IV, two datasets, Primary Health Care Activity Monitor for Europe (PHAMEU) data and Values Survey Module 2013 (VSM2013) data were merged into QUALICOPC data in order to investigate the association between several country-level variables and patient enablement.

4.2.4.1 Primary care dimensions (PHAMEU data)

Primary Health Care Activity Monitor for Europe (PHAMEU) was a research funded project by the European Community under the Public Health Action Programme. It was conducted between 2007 and 2010. The project was coordinated by the Netherlands Institute for Health Services Research (NIVEL). The project covered 27 European Union (EU) member states, Iceland, Norway, Switzerland, and Turkey. The PHAMEU project was established to collect information and knowledge about the state and development of primary care systems in Europe and to create a health care measurement instrument valid in all national situations. (24,154).

The PHAMEU data consists of score calculations about primary care dimensions: governance, economic conditions and workforce development on a structural level; access, comprehensiveness, continuity, and coordination of primary care services on a process level; and quality, and efficiency of primary care on an outcome level (25). When creating these measurements, a systematic literature review was performed and indicators from international databases (OECD Health Data; World Health Organisation Health for All Database; Eurostat; World Bank Health, Nutrition, and Population Statistics; and European Union Public Health Information and Knowledge system (EUPHIX)) were searched. The relevance, precision, flexibility, and discriminating power of these indicators, as well as overall suitability for comparison across countries, were assessed. The final set of indicators was included in the measurement called the European Primary Care Activity Monitor. (24,25)

In this study, we used four PHAMEU variables that reflect the health care structure: primary care governance, economic conditions, workforce development and total structure. These variables have numeric values for each country, calculated from several indicators (24). The scale on these indicators are from 0 to 3, with a higher number representing stronger primary care orientation. For example, Finland has high values of all the variables: 2.38 on governance, 2.25 on economic conditions, 2.22 on workforce development and 2.31 on total structure. In contrast, Bulgaria has 2.45 on governance, 1.88 on economic conditions, 1.99 on workforce development and 2.14 on total structure The PHAMEU variables are used as continuous variables in the logistic regression analyses.

4.2.4.2 Cultural Dimensions (Values Survey Module 2013)

In this study, we also use the data ´Values Survey Module 2013´ (VSM2013) by Hofstede, Hofstede and Minkov, which is available for academic research and meant for comparing nationalities (43). The data is based in Hofstede´s theory of national cultural dimensions (42). These include Power Distance, Individualism vs Collectivism, Masculinity vs Femininity, Uncertainty Avoidance, Long-Term v. Short-Term Orientation and Indulgence vs Restraint (42). Power Distance deals with attitudes towards unequal power distribution. Individualism vs Collectivism reflect societal tendencies of people to feel independent instead of interdependent. Masculinity vs Femininity deals with social endorsement for use of force and social roles. Uncertainty Avoidance reflects societal tolerance of uncertainty and ambiguity. Long-Term vs Short-Term Orientation reflects attitudes towards change, and Indulgence vs. restraint reflects attitudes towards good things in life. (42,43)

In the VSM2013 dataset, every country has a numeric value of each dimension and thus a unique combination of those values. For example, Finland has a value for Power Distance of 33 (higher number indicating larger power distance); Individualism vs Collectivism, 63 (higher number indicating higher individualism); Masculinity vs Femininity, 26 (higher number indicating higher masculinity); Uncertainty Avoidance, 59 (higher number indicating higher uncertainty tolerance); Long-Term vs Short-Term Orientation, 38 (higher number indicating more long-term orientation); and Indulgence vs Restraint, 57 (higher number indicating higher indulgence) (43). The scale of each dimension was originally from 0 to 100, but with later study rounds, some countries have achieved a value over 100 in dimensions Power Distance, Masculinity vs Femininity, and Uncertainty Avoidance (43). In our analyses, we use Hofstede´s dimensions as continuous variables on the country level.

4.2.5 Statistical analyses

4.2.5.1 Basic statistical methods and logistic regression

In this study, basic descriptive statistics – such as frequencies, means, medians and standard deviations (155) – were used to summarize and describe the data. Cross-tabulation was used to find simple associations between variables. In Publications III and IV, logistic regression and multi-level modelling were the main statistical methods.

The purpose of logistic regression is to find a model to describe the relationship between an outcome and independent variables (156). Logistic regression is a suitable method when the outcome variable is binary or ordinal (156,157). With logistic regression models it is possible 1) to control the effects of several confounding variables and 2) to distinguish the contemporary effects/associations of several explanatory variables on the outcome variable (157).

In a logistic regression model, the probability of a certain outcome event is observed by calculation of a logit function that is converted into an odds ratio, or OR (157,158). OR refers to the ratio of the probabilities that the outcome event occurs or does not occur (156–158). OR reflects the strength of the possible association between any variable and the outcome variable. (158). Logistic regression could be performed with all variables simultaneously in the model, or with stepwise analysis, when the computer adds variables one by one (forward-stepwise) or takes them out one by one (backward-stepwise), thus calculating the best fitting model.

4.2.5.2 Multi-level modelling

Due to the clustered nature of the QUALICOPC data, simple multivariable analysis methods are not the best suitable. Namely, it cannot be assumed that the observations are independent; rather, the observations are interdependent and may change significantly within levels (158). For example, in the QUALICOPC data, the observations (i.e. patient perceptions) could be very different depending on both the practice the patient visits and the country in which the patient lives.

Multi-level modelling allows the analysis of individual level outcomes in relation to variables on the same or higher level. Usually, on the individual level, variance is used as a summary measure of the total variation in the sample. Multi-level analysis enables us to split up the variation into parts that are attributable to different levels.

(159) For example, with QUALICOPC data, using multi-level modelling, we should find how the variance of patients´ perceptions of patient enablement is explained by individual-, practice-, or country-level variables.

4.2.5.3 Multi-level logistic regression

In a multi-level logistic regression analysis, the purpose is 1) to estimate the probability of a certain outcome event to occur and, simultaneously, 2) to observe the change in variances between different levels of data.

In a multi-level logistic regression model, the odds (probability) of the outcome event are allowed to vary between clusters. Moreover, the association or effect of different variables is expressed with intercepts and slopes. Fixed intercept refers to the average odds of the outcome in the whole sample. Random intercept means that these odds vary between clusters. Consequently, the effect of a variable on the odds of the outcome event may vary between clusters; this is taken into account by forming slopes. A fixed slope refers to the average effect of a variable in the whole sample; random slope refers to a variation of this effect between clusters. (158,159) Analogously, random intercept variance refers to how the odds vary between clusters, and random slope variance refers to how the effects of the variables vary between clusters (158).

4.2.5.4 Interpretation of multi-level logistic regression analysis

When interpreting one-level logistic regression analysis, it is usually rather simple and intuitive: the OR of a certain variable refers directly to the ratio between the odds that the outcome occurs or not (157). For example, with an OR of 2, one unit/class increase in the variable increases the odds of the outcome event two times, adjusted to other variables in the analysis. However, in multi-level logistic regression, the interpretation of results is that straightforward only for the lowest-level variables: the OR is a measure for association adjusted for other variables in the analysis and the cluster (160). For higher-level variables, the OR is biased due to the fact that the values of cluster-level variables are constant to all lowest-level variables (160).

Several methods have been developed to assist in the interpretation of the ORs of higher-level variables in multi-level logistic regression models. In this study, we use the variance partition coefficient (VPC) and the median odds ratio (MOR).

The VPC quantifies the proportion of observed variation in the outcome that is attributable to the effect of clustering (159,160). The VPC would be equal to 1 if all subjects in the same cluster have similar response and equal to 0 if no subject in the same cluster has similar response (160). The VPCs could be calculated for all levels in the model. They are cumulative across levels and thus consider both between- and intra-cluster variances (159,160). The VPC is rather simple to interpret (159): for example, the cluster-level VPC of 0.10 refers to the fact that 10% of the variation of the outcome measure is due to cluster level and the remaining 90% of variation is explained by unmeasured differences between lower-level variables.

The MOR is the median odds ratio between two randomly chosen individuals with the same covariates but from different clusters (161). When using this approach, differences in risk are entirely quantified by the cluster-specific effects (160,161). The MOR is comparable with individual-level ORs and thus helps to quantify the associations of cluster-level effects (160).

4.2.5.5 Variables associated with patient enablement in Finland (III)

The statistical analyses were performed using IBM SPSS version 23 and R Software environment for statistical computing and graphics, version 2.13.0. Patient enablement was measured using single-item measure Q1 (original version): ´After this visit, I feel I am able to cope better with my health problem/illness than before the visit – yes/no/don´t know´. For logistic regression, Q1 was dichotomised, as no and don´t knows were combined.

Firstly, descriptive statistics and cross-tabulation were performed to assess relations between other variables and patient enablement. Secondly, bivariate logistic regression analysis was performed to find out strongest associations. Thirdly, due to large number of variables, forward-stepwise, multivariable logistic regression analyses were performed using theme groups. All statistically significant ($P < .05$) factors in the theme group analyses were included in the final multivariable model. Finally, due to the nested nature of the data and thus a possible variation of patient enablement on the GP/Practice level, multilevel modeling was used. Generalised linear mixed-effect models were created; a random intercept model – a model where the odds of the outcome could vary between clusters – was used to account for the variation in the number of patients per GP.

4.2.5.6 Explaining variation in patient enablement in 31 countries (IV)

All the statistical analyses were performed with Stata version 15.0. The modelling strategy is presented in Figure 10. Firstly, a ´null model´ (Model 0), a multi-level logistic regression analysis, with single-item measure Q1 (original version) as a dependent variable, was performed to explore variances between countries and practices. Secondly, patient-level variables (patient characteristics and patient perceptions of the consultation) were included (Model 1). Thirdly, practice-level variables (GP and practice characteristics) were added (Model 2). Finally, country-level variables (health care system characteristics, primary care dimensions, and cultural dimensions) were added one by one. Three country-level variables which could best explain the variation were then kept in the final model (Model 3). Only three country-level variables could be included simultaneously in the final model, as the number of higher-level variables should not exceed 10% of the number of higher-level units (159).

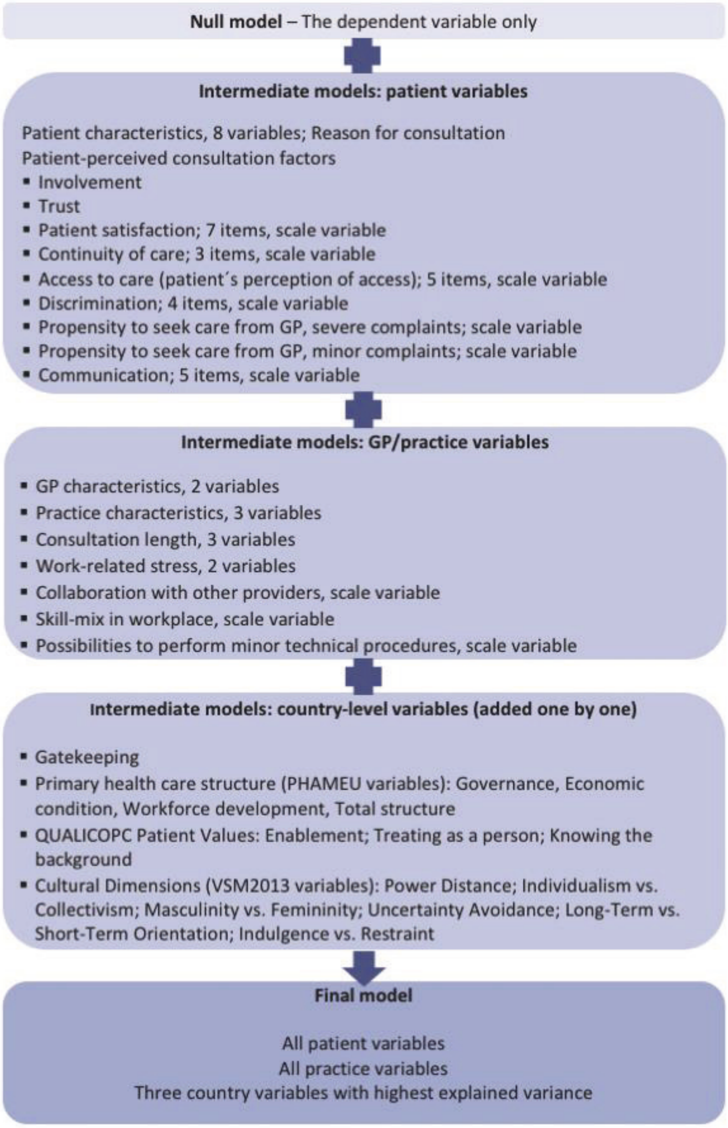
To calculate the share of variance at the practice and country levels, individual level variance was approximated by $\pi^2/3$. The explanatory power of the models was evaluated by calculating the explained variance of each model compared to the variance in the null model, using VPCs. Also, median odds ratios (MORs) were calculated for higher levels in each model.

The operationalisation of the QUALICOPC variables is presented in the Appendix section. With some of the constructs, scale variables were formed using an ecometric approach. In this approach, multi-level analysis is used to construct a contextual variable at a higher-level unit based on individual variables. The scale construction process has been used in previous studies using QUALICOPC data, and is described in detail elsewhere (162). To improve interpretability of the models, the scale scores were transformed into z-scores (score minus the average divided by the standard deviation). Hence, a z-score of 0 represents the mean score and a score of 1 represents one standard deviation increase.

For two variables (trust in doctors in Australia and Poland and mean consultation time in Australia), there were no observations. Thus, value imputation (replacing the missing value by an average value of the subset of other countries) was used in order to minimise losing data. This procedure had been used in earlier QUALICOPC studies (Peter Spreeuwenberg from NIVEL, personal communication). Otherwise, missing values were excluded from the analyses.

4.3 Ethical issues

The Patient Enablement study in Pirkanmaa study design was approved in December 2016 by the Ethics Committee of the Tampere Region (no specific permission number). The QUALICOPC study design was approved in October 2011 by Ethics committee of the Pirkanmaa Hospital District, with permission number R11153.



Null model – The dependent variable only

Intermediate models: patient variables

Patient characteristics, 8 variables; Reason for consultation
Patient-perceived consultation factors

- Involvement
- Trust
- Patient satisfaction; 7 items, scale variable
- Continuity of care; 3 items, scale variable
- Access to care (patient´s perception of access); 5 items, scale variable
- Discrimination; 4 items, scale variable
- Propensity to seek care from GP, severe complaints; scale variable
- Propensity to seek care from GP, minor complaints; scale variable
- Communication; 5 items, scale variable

Intermediate models: GP/practice variables

- GP characteristics, 2 variables
- Practice characteristics, 3 variables
- Consultation length, 3 variables
- Work-related stress, 2 variables
- Collaboration with other providers, scale variable
- Skill-mix in workplace, scale variable
- Possibilities to perform minor technical procedures, scale variable

Intermediate models: country-level variables (added one by one)

- Gatekeeping
- Primary health care structure (PHAMEU variables): Governance, Economic condition, Workforce development, Total structure
- QUALICOPC Patient Values: Enablement; Treating as a person; Knowing the background
- Cultural Dimensions (VSM2013 variables): Power Distance; Individualism vs. Collectivism; Masculinity vs. Femininity; Uncertainty Avoidance; Long-Term vs. Short-Term Orientation; Indulgence vs. Restraint

Final model

All patient variables
All practice variables
Three country variables with highest explained variance

GP= General practitioner, PHAMEU = Primary Health Care Activity Monitor in Europe, QUALICOPC = Quality and Costs of Primary Care in Europe, VSM2013 = Values Survey Module 2013

Figure 10. Construction of the multi-level models in Publication IV

5 RESULTS

5.1 Patient enablement study (I and II)

5.1.1 Participants

The demographic information from the study sample (n = 483) is presented in Table 2. The mean age of the participants was 58.5 years (range 18–97, SD 19.1), and 313 (64.8%) were female.

Altogether 175 patients who 1) had participated in a to telephone interview two weeks after the appointment and 2) had not had any appointments in the interim period were included in the test-retest analyses. Compared to non-participants (n = 254), those who participated in the telephone interview were older, more often retired, had more chronic illnesses, and were more likely to have a higher-level education and live in a semi-rural location. These differences were statistically significant with Chi-squared tests.

Table 2. Distribution of the patient characteristics and group comparison by participation in the telephone interview in Patient Enablement in Pirkanmaa study, n = 483

	All participants, n = 483		**Comparison by participation in the telephone interview (test-retest analyses)**			
			Patients included in the test-retest analyses, n = 175*		Patients who did not participate in the telephone interview, n = 254	
Age**						
Range	18–97		**19–88**		**18–97**	
Mean (SD)	58.5 (19.1)		**62.2 (17.2)**		**56.2 (20.4)**	
Data missing/NA	17	3.5	7	4.0	9	3.5
Mean PEI score immediately after the appointment						
Mean (SD)	3.78 (3.83)		4.13 (3.95)		3.81 (3.86)	
	n	**%**	**n**	**%**	**n**	**%**
Gender						
Female	313	64.8	108	61.7	173	68.1
Male	153	32.8	60	34.3	73	28.7
Other	1	0.2	0	0	1	0.4
Data missing/NA	16	3.3	7	4.0	7	2.8
Language						
Finnish	455	94.2	164	93.7	240	94.5
Other	5	1.1	2	1.1	2	0.8
Data missing/NA	23	4.8	9	5.1	12	4.7
Co-habitation						
Single, divorced, widowed	199	41.2	72	41.1	105	41.3
Married, registered partnership, or common-law marriage	267	55.3	96	54.9	140	55.2
Data missing/NA	17	3.5	7	4.0	9	3.5
Education**						
No qualifications obtained or primary education (lower-level)	119	24.9	41	23.4	65	25.6
Upper secondary-level education (middle-level)	245	50.7	**80**	**45.7**	**141**	**55.5**
Post-secondary or higher (higher-level)	98	20.3	**47**	**26.9**	**37**	**14.6**
Data missing/NA	21	4.3	7	4.0	11	4.3

Working status**						
Working	92	19.0	**21**	**12.0**	**61**	**24.0**
Retired	275	56.9	**112**	**64.0**	**135**	**53.1**
Other (unemployed, student, other)	99	20.5	**34**	**19.4**	**51**	**20.1**
Data missing/NA	17	3.5	8	4.6	7	2.8
Self-perceived health						
Excellent	32	6.6	10	5.7	21	8.3
Good	165	34.2	66	37.5	85	33.5
Fair	171	35.4	60	34.3	85	33.5
Poor	18	3.7	6	3.4	7	2.8
Data missing/NA	97	20.1	33	18.8	56	22.0
Number of chronic illnesses**						
No chronic illness	78	16.1	**22**	**12.6**	**48**	**18.9**
1	116	24.0	**38**	**21.7**	**69**	**27.2**
2–3	191	39.5	**80**	**45.7**	**87**	**34.3**
>3	61	12.6	**26**	**14.9**	**26**	**11.3**
Data missing/NA	37	7.7	9	5.1	24	9.4
Number of reasons for the consultation **						
1	299	61.9	**98**	**56.0**	**170**	**66.9**
>1	170	35.2	**71**	**40.6**	**77**	**30.3**
Data missing/NA	14	2.9	6	3.4	7	2.8
Reason for the consultation						
Acute	158	32.7	52	29.7	83	32.7
Non-acute	311	64.4	117	66.9	164	64.6
Data missing/NA	14	2.9	6	3.4	7	2.8
Location**						
Semi-rural	147	30.4	**58**	**33.1**	**63**	**24.8**
Urban	196	40.6	**78**	**44.6**	**108**	**42.5**
Rural	140	29.0	**39**	**22.3**	**83**	**32.7**

*Patients who had not visited a doctor in the interim period and had completed the PEI at the baseline and retest; 26 of these had not completed Q1

**Statistically significant difference ($p<0.05$) between groups in the Chi-square test (bolded), missing values excluded from the analyses

5.1.2 Validity and reliability of the Patient Enablement Instrument (I)

5.1.2.1 Content validity and acceptability of the measurements

The results of the pilot study reflect the good content validity of both the PEI and the single-item measures. In general, the patients accepted the study questionnaires well. The majority of the respondents found the questions important and relevant. The respondents could fill out the questionnaires without having particular problems; only some minor adjustments were made.

When analysing the questionnaire study part, the overall acceptability of the PEI in the Finnish health care centre context can be considered as good. In 42 of 546 responses (7.7%), the whole of questionnaire B was empty. In only 21 (3.8%) responses, PEI scores were truly not calculable, with more than three items missing. All 63 responses with no result of PEI score were excluded from the analyses, leaving 483 responses to form the study sample.

The mean PEI score immediately after the appointment was 3.78 (range 0–12, SD 3.83). Altogether 131 of 483 (27.1%) had a score of 0 points score and 37 (7.7%) had a score of 12. Only 16 respondents (3.3%) had any of the items missing.

The distributions of the PEI answers immediately after the appointment are presented in Table 3. The option ´less´ was chosen 39 times out of 2,898 answers (1.3%). The PEI developers decided to merge the options ´less´ and ´same´, because only 1% of respondents chose the option ´less´ in any of the questions (7). Since the situation was similar in this study, we adhered to this conclusion and combined the options ´less´ and ´same´. Furthermore, the option ´not applicable´ was chosen 86 times out of 2,898 answers (3.0%).

Table 3. The distributions of the Patient Enablement Instrument items immediately after the appointment in the Patient Enablement in Pirkanmaa study, n = 483

As a result of your visit to the doctor today, do you feel you are…	Much better/ much more, n (%)	Better / more, n (%)	Same n (%)	Less n (%)	Not applicable (N/A), n (%)	Missing, n (%)
Able to understand your illness	123 (25.5)	157 (32.5)	185 (38.3)	6 (1.2)	9 (1.9)	3 (0.6)
Able to cope with your illness	98 (20.3)	138 (28.6)	207 (42.9)	12 (2.5)	20 (4.1)	8 (1.7)
Able to keep yourself healthy	69 (14.3)	130 (26.9)	254 (52.6)	6 (1.2)	22 (4.6)	2 (0.4)
Able to cope with life	61 (12.6)	116 (24.0)	286 (59.2)	3 (0.6)	13 (2.7)	4 (0.8)
Confident about your health	83 (17.2)	141 (29.2)	242 (50.1)	5 (1.0)	10 (2.1)	2 (0.4)
Able to help yourself	68 (14.1)	138 (28.6)	254 (52.6)	7 (1.4)	12 (2.5)	4 (0.8)

5.1.2.2 Construct validity

Construct validity, that is, that the instrument measures the construct it is supposed to, was evaluated using factor analysis, item-correlations and hypothesis testing. First, principal component factor analysis with Varimax rotation produced one factor with an eigenvalue >1. This factor explained 73% of the variance at the baseline and 61% of the variance after the two-week interval. Each scale item had a similar factor loading. These results confirm the unidimensional structure of the PEI – all six questions seem to measure the same construct.

Second, in item-correlation analyses, correlations between the PEI items and the PEI score were strong, with Spearman's rho 0.79–0.84 at the baseline and 0.65–0.76 at the retest. In contrast, the correlations between the PEI items or total PEI score and the comparison questions were weak, with Spearman's rho 0.15–0.33. This suggests that the PEI measures aspects different than patient satisfaction, benefit, involvement, or instruction evaluation. All of those correlations are presented in Table 4.

Table 4. Spearman correlations between each Patient Enablement Instrument (PEI) item, total PEI score, and the comparison questions in Patient Enablement in the Pirkanmaa study

PEI item	Total PEI score immedi-ately, n = 483	Total PEI score two weeks after, n = 175	Patient satisfaction*, n = 483	Perceived benefit**, n = 483	Decision involve-ment***, n = 483	Adequate instruct-ions****, n=483
Understand illness	0.82	0.76	0.27	0.28	0.24	0.28
Cope with illness	0.84	0.73	0.19	0.28	0.24	0.25
Keep yourself healthy	0.82	0.65	0.15	0.18	0.15	0.22
Cope with life	0.79	0.67	0.20	0.21	0.19	0.24
Be confident about your health	0.83	0.76	0.18	0.27	0.21	0.24
Help yourself	0.82	0.76	0.26	0.24	0.22	0.24
Total PEI score immediately			0.32	0.33	0.28	0.33

*Patient satisfaction: ´I would recommend this doctor to a friend or a relative´
**Perceived benefit: ´I got benefit from my appointment with this doctor´
***Decision involvement: ´I was involved in the decisions made at the appointment´
**** Adequate instructions: ´I got adequate instructions to carry on with my care´

All correlations were significant at the 0.01 level.

In another part of construct validity, hypothesis testing, *a priori* hypotheses were partly confirmed. As expected, patients with a worse state of health had significantly lower PEI scores than patients with good self-perceived health. Furthermore, there were no differences between age and gender groups (data not shown). In contrast, against expectations, there were no differences in the distributions or means of the PEI score when comparing groups by the number of chronic illnesses or the consultation reason (neither acute vs long-term issue nor one vs more than another issue).

5.1.2.3 Reliability

The reliability of the PEI, that is, that the measurement is free from error, showed high internal consistency, poor test-retest reliability and moderate standard error of measurement (SEM). The internal consistency of the PEI appeared high, with Cronbach's alpha of 0.93 (95% CI 0.91–0.94, p<0.001) at the baseline and 0.87 (95% CI 0.84–0.90, p<0.001) at the retest. The alpha coefficient was lower (0.906–0.914 at the baseline and 0.84–0.86 at the retest) when any of the six items were deleted, confirming the interrelatedness of the items.

Altogether 175 patients who had participated in the telephone interview and not met a doctor in primary or secondary care in the interim period were included in test-retest reliability analyses. Among those, the mean PEI score immediately after the appointment was 4.13 (range 0–12, SD 3.95). After the two-week interval, the mean PEI score was 2.78 (range 0–12, SD 3.0). This difference of means showed to be statistically significant with Wilcoxon signed rank test (Z=-5.29, p<0.001). Kappa statistics showed only weak agreement (0.23-0.29) on all the questions.

Measured immediately after the appointment (using Cronbach´s alpha), the standard error of measurement for the PEI score was: $SEM = 3.83\sqrt{1-0.93}$ = 3.83*0.26 = 0.996 ≈ 1.0 points. Calculated with the test-retest reliability coefficient (Cohen's kappa mean 0.26), the retest-SEM for the PEI in this study was 2.97*0.74 = 2.198 ≈ 2.2 points.

5.1.3 Patient enablement with a single-item measure (II)

5.1.3.1 Distribution and dichotomisation of the single-item measures

The evaluation of the single-item measures showed skewed distribution of responses for both Q1 and Q2. Thus, dichotomisation was used in order to achieve higher comparability between the two measures. On Q1 which had a 4-item Likert scale, 237 patients (49.1%) chose the item ´I totally agree´; 149 (30.8%) the item ´I partly agree´; and only 40 (8.2%) either of the ´disagree´ options. Altogether 17 (3.5%) responses were missing. With this kind of uneven distribution, the dichotomisation for positive and negative poles would create two imbalanced groups and cause technical difficulties for the statistical analyses. Thus, the Q1 responses were dichotomised using ´totally agree´ versus ´not totally agree´ (i.e. the other three options). We regarded that those who were totally agreeing with the question represent those who would have most likely chosen ´yes´ in the original questionnaire. In addition, while the ´not applicable´ (NA) values are counted as 0 in the PEI, we combined the NA values (n=40; 8.3%) with the ´not totally agree´ group.

For Q2 with the PEI-alike scale, 98 of 483 patients (20.3%) answered ´much better´, 138 (28.6%) answered ´better´, and 239 (49.5%) answered ´same or less´. Eight (1.7%) responses were missing. Q2 responses were dichotomised as ´much better or better´ vs ´same or less´.

5.1.3.2 Criterion validity

Criterion validity, that is, the relation between Q1 and Q2 and the ´gold standard´, the PEI score was assessed using different PEI score cut-offs. For the different cut-off points (0, 3, and 6 points), the sensitivity, specificity, and positive and negative predictive values were calculated. These are presented in Table 5. Both Q1 and Q2 had high negative predictive values (95.6% and 98.1%, respectively) with a PEI cut-off score of 6 points. This indicates that a patient who had responded negatively to these questions, had a very high probability to have PEI score lower than 6.

Table 5. The sensitivity, specificity, and positive and negative predictive values of single-item measures Q1 and Q2 using different Patient Enablement Instrument cut-off scores in Patient Enablement in PIrkanmaa study, n = 466.

PEI cut-off score	**Sensitivity (%)**		**Specificity (%)**		**Positive predictive value (PPV), (%)**		**Negative predictive value (NPV), (%)**	
	Q1	Q2	Q1	Q2	Q1	Q2	Q1	Q2
Zero points (0 vs 1–12)	86.6	64.8	75.4	100.0	86.9	54.4	41.4	100.0
Three points (0–3 vs 4–12)	69.7	92.0	66.9	81.4	70.0	78.4	68.6	93.3
Six points (0–6 vs 7–12)	90.0	98.1	60.0	63.9	38.4	43.2	95.6	98.1

Sensitivity = the proportion of ´true positive´ patients, i.e. patients who answered positively to Q1 or Q2 among those who had higher PEI scores.

Specificity = the proportion of ´true negative´ patients, i.e. patients who answered negatively to Q1 or Q2 among those who had lower PEI scores.

Positive predictive value = the proportion of patients who actually had a higher PEI score among those who answered positively to Q1 or Q2.

Negative predictive value = the proportion of patients who actually had a lower PEI score among those who answered negatively to Q1 or Q2.

Q1 (Pirkanmaa version): ´After this visit, I feel I am able to cope better with my symptom/illness than before the visit´. Possible answers: ´I totally agree / I partly agree / I partly disagree / I totally disagree / not applicable´.

Q2: ´As a result of your visit to the doctor today, do you feel you are able to cope with your illness…´ Possible answers: ´much better / better / same / less / not applicable´.

5.1.3.3 Construct validity

Analysis of item-correlations was used in order to evaluate that the single-item measures truly measure patient enablement and no other constructs. Table 6 includes Spearman correlations between Q1, Q2, other PEI items, the PEI score, and the comparison questions. All correlations were significant at the 0.01-level.

The correlations between Q1 and other items were moderate: correlations with PEI items ranged from 0.38 to 0.49 and the correlation with PEI score was 0.50. The correlations between the comparison questions were 0.31–0.47. This indicates that Q1 measures patient enablement only fairly well and that it is closer to other constructs.

The correlations between Q2 and the other PEI items were stronger: correlations with the PEI items varied from 0.57 to 0.70, correlation with the PEI score were 0.84, and correlations with the comparison questions were 0.20–0.29. These results indicate good construct validity for Q2; it seems to measure patient enablement well and not to measure other constructs.

Table 6. Spearman correlations between single-item measures Q1, Q2, other Patient Enablement Instrument (PEI) items, the PEI score, and the comparison questions in the Patient Enablement in Pirkanmaa study, n = 483

PEI item	**Q1***	**Q2****
Understand illness	0.40	0.70
Q2: Cope with illness	0.49	1.00
Keep yourself healthy	0.38	0.67
Cope with life	0.43	0.62
Keep confident about your health	0.40	0.57
Help yourself	0.44	0.63
PEI score immediately	0.50	0.84
Comparison question		
I would recommend this doctor to a friend or a relative	0.31	0.20
I benefited from my appointment with this doctor	0.47	0.29
I was involved in the decisions made at the appointment	0.33	0.22
I got adequate instructions to carry on with my care	0.40	0.25

*Q1 (Pirkanmaa version): ´After this visit, I feel I am able to cope better with my symptom/illness than before the visit.´ Possible answers: ´I totally agree / I partly agree / I partly disagree / I totally disagree / not applicable´.

**Q2: ´As a result of your visit to the doctor today, do you feel you are able to cope with your illness…´ Possible answers: ´much better / better / same / less / not applicable´.

5.1.3.4 Reliability

The reliability of the single-item measures was calculated with the formula $r(xy) = \sqrt{r(xx) * r(yy)}$ (72). In this formula, *r(xy)* is the correlation between variables, *r(xx)* is the reliability of the single-item measure Q1 or Q2 and *r(yy)* is the reliability the scale measure PEI. The Spearman correlations between Q1 and the PEI were 0.50; between Q2 and the PEI 0.84. For the PEI, the Cronbach's alpha reliability coefficient was 0.93. Using the formula, the reliability was 0.27 for Q1 and 0.76 for Q2.

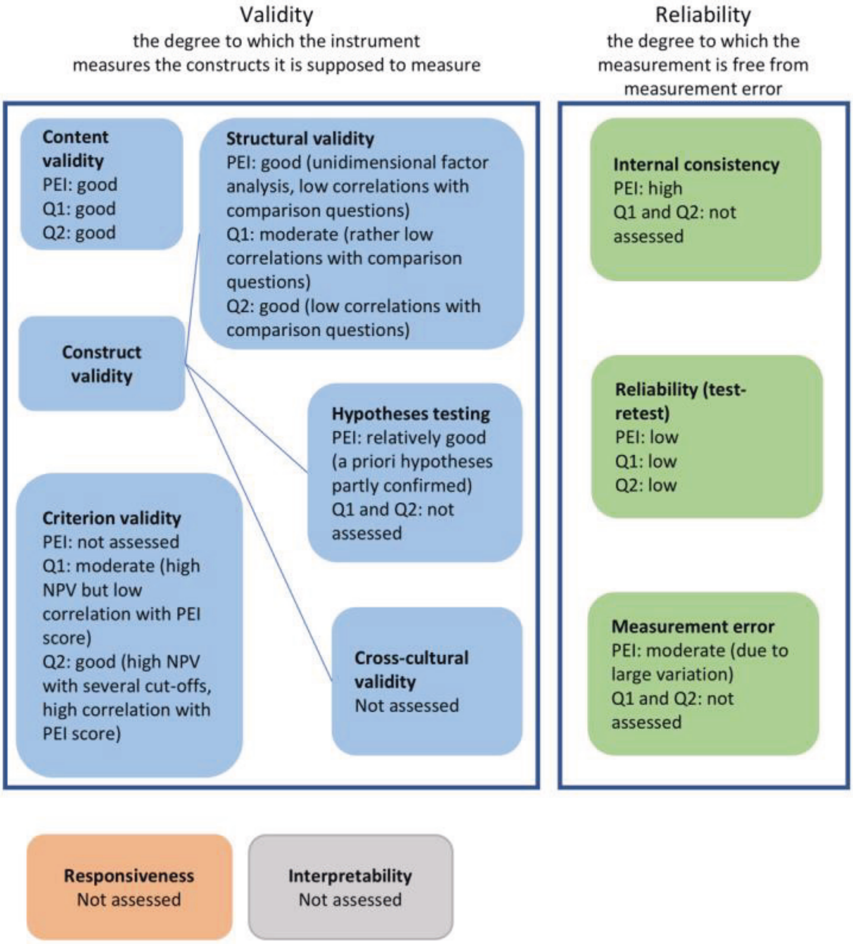
In order to evaluate the test-retest reliability of Q1, it was treated as a numeric variable and the means at the baseline and retest were calculated. Altogether 149 patients had completed Q1 both the baseline and two weeks after the appointment. The mean for Q1 was 3.49 (SD 0.85) at the baseline and 3.03 (SD 0.72) at the retest. The difference between means was statistically significant in the Wilcoxon signed rank test (Z=-5.52, $p<0.001$). In addition, when treated as categorical variables, the kappa values measuring total agreement between the baseline and the retest were only 0.21 for Q1 and 0.29 for Q2, confirming the low test-retest reliability of both. This pattern was similar with the PEI score, all other PEI items, and the comparison questions.

5.1.4 Summary of the main results in the Patient Enablement in Pirkanmaa study (I and II)

The summary of the main results of Patient Enablement in Pirkanmaa study is presented in Figure 11. Tested among Finnish health care centre patients, the PEI seems to have good acceptability and content validity, good construct validity (a highly unidimensional structure and relatively successful hypothesis testing), high internal consistency, and moderate to low reliability (a moderate standard error of measurement, but a low test-retest reliability).

For measuring patient enablement with a single-item measure, Q2, which is included in the PEI questionnaire, seems to be suitable for that purpose. Q2 has a good content validity and a good structural validity. When compared to the PEI, it has a high criterion validity: Q2 is strongly correlated with the PEI score and has a high sensitivity and negative predictive value with the PEI cut-off scores of three and six. In addition, Q2 has a high reliability coefficient, but, similarly to the PEI, a low test-retest reliability.

Likewise, Q1 (Pirkanmaa version), which has a rather similar wording but a different scale with Q2, has a good content validity, rather good structural validity, a high sensitivity and a negative predictive value with a PEI cut-off score of six. However, the correlation with the PEI score and the reliability coefficient of Q1 are significantly lower than with Q2. The test-retest reliability of Q1 is low.



PEI = Patient Enablement Instrument
Q1 (Pirkanmaa version): "After this visit, I feel I am able to cope better with my symptom/illness than before the visit."
Possible answers: "I totally agree / I partly agree / I partly disagree / I totally disagree / not applicable".
Q2: "As a result of your visit to the doctor today, do you feel you are able to cope with your illness..."
Possible answers: "much better / better / same / less / not applicable".
NPV = Negative predictive value

Figure 11. Summary of the main results in the Patient Enablement in Pirkanmaa study

5.2 The QUALICOPC study (III and IV)

5.2.1 Variables associated with patient enablement in Finland (III)

5.2.1.1 Participants (III)

The distributions of the demographic factors of the Finnish study sample are presented in Table 7. The mean age of the patients was 59 years (range 18–97 years), and 51.5% were older than 65 years. The answers to the dependent variable ´After this visit, I feel I can cope better with my health problem/illness than before the visit,´ were distributed thus: ´yes´ 898 (75.1%); ´no´ 36 (3.0%); ´don't know´ 233 (19.5%); and ´missing´ 29 (2.4%).

5.2.1.2 Logistic regression results

From all 36 factors included in the logistic regression analyses, altogether 19 statistically significant factors ($p < .05$) were found in the bivariate analyses. In the multivariate theme group analyses, altogether 11 statistically significant variables were found. These include: patient´s age, patient´s language skills; two variables reflecting doctor-patient communication; two variables reflecting patient satisfaction; one variable reflecting discrimination; one of practice safety; and three variables reflecting continuity of care. All multivariate models were adjusted for patient´s age and sex. The results of the bivariate analyses and the thematic group analyses can be found in the Appendix section.

All 12 statistically significant variables and patient´s gender were included in the final multivariate model. The results of the final model are presented in Table 8. Patient enablement, measured by a single question, was positively associated with variables reflecting patient satisfaction and doctor-patient communication, and negatively associated with patient´s weaker language skills. The strongest positive association was found with variables reflecting patient satisfaction (agreement with ´This doctor doesn't just deal with medical problems but can also help with personal problems,´ odds ratio (OR) 3.15, 95% CI 2.17-4.58, $p < .001$). The interpretation of the results did not change after multilevel modeling.

Table 7. Patient characteristics of the Finnish Quality and Costs of Primary care in Europe (QUALICOPC) study sample, n=1196

Factor		n	%
Age	<30 years	95	7.9
	30 – 49 years	227	19.0
	50 – 69 years	467	39.0
	>70 years	389	32.5
	Missing	18	1.5
Gender	Male	430	36.0
	Female	761	63.6
	Missing	5	0.4
Chronic illness	No	354	29.6
	Yes	836	69.9
	Missing	6	0.5
Self-perceived health	Very good	55	4.6
	Good	412	34.4
	Fair	617	51.6
	Poor	109	9.1
	Missing	3	0.3
Land of birth	Finland	1171	97.9
	Other country	17	1.4
	Missing	8	0.7
Language skills	Fluently/native speaker	1097	91.7
	Sufficiently/moderately/poorly/not at all	87	7.3
	Missing	12	1.0
Education	Pre-primary or primary or no qualifications	757	63.3
	Upper secondary level	313	26.2
	Post-secondary or higher	105	8.8
	Missing	21	1.8
Household income, self-estimation	Below average	477	39.9
	About average	625	52.3
	Above average	81	6.8
	Missing	13	1.1
Working status	Working, family business, civil service	291	24.3
	Student, unemployed, mainly homemaker or unable to work due to illness	218	18.2
	Retired	679	56.8
	Missing	8	0.7

Table 8. Results of the final multivariate model using the Finnish Quality and Costs of Primary care in Europe (QUALICOPC) data; the odds of positive patient enablement, measured by a single question, n = 1081

Variable	Odds Ratio	95% CI	*p*
Patient factors			
Language skills, fluent (reference) vs not fluent	0.54	0.32-0.93	0.027
Consultation factors			
Doctor-patient communication: The doctor asked questions about my health problem, no (reference) vs yes	2.39	1.49-3.83	<0.001
Patient satisfaction: I would recommend this doctor to a friend or relative, no (reference) vs yes	2.65	1.27-5.54	0.010
Patient satisfaction: This doctor doesn't just deal with medical problems but can also help with personal problems, no (reference) vs yes	3.15	2.17-4.58	<0.001

Note: The model includes 10 variables and patient´s age and gender

5.2.2 Explaining patient enablement variation in 31 countries (IV)

5.2.2.1 Participants

In this analysis, data collected from altogether 7,210 GPs from 31 countries were used. From the practices of these GPs, altogether 61,458 patients were recruited to participate. The characteristics of patients and GPs who participated are presented in Tables 9 and 10, respectively. Among the participants, 58,930 patients answered the dependent variable ´After this visit, I feel I am able to cope better with my health problem/illness than before the appointment´. Altogether 13,367 (21.7%) had answered ´no´ or ´don´t know´, interpreted as lower enablement. The distribution of the answers for the dependent variable in each country is presented in Table 11.

Table 9. Distribution of patient characteristics in the Quality and Costs of Primary care in Europe (QUALICOPC) study sample with 31 countries, n = 61,458

		n	%
Age	17–39	18024	29.3
	40–64	27330	44.5
	65 or over	15061	24.5
	Missing	1043	1.7
Gender	Male	23,735	38.6
	Female	37,257	60.6
	Missing	466	0.8
Household income, self-estimation	Below average	18,428	30.0
	Around average	34,487	56.1
	Above average	7,573	12.3
	Missing	970	1.6
Education	No qualifications obtained/ Pre-primary education or primary	16,529	26.9
	Upper secondary level of education	23,147	37.7
	Post-secondary, non-tertiary education	20,655	33.6
	Missing	1,127	1.8
Ethnicity	Native	53,369	86.8
	Second generation immigrant	2,624	4.3
	First generation immigrant	4,837	7.9
	Missing	628	1.0
Language skills	Fluently/native speaker level	49,086	79.9
	Sufficiently/ Moderately / Poorly / Not at all	11,618	18.9
	Missing	754	1.2
Chronic disease	No	30,582	49.8
	Yes	30,505	49.6
	Missing	371	0.6
Self-perceived health	Very good or good	37,301	60.7
	Fair or poor	23,875	38.9
	Missing	277	0.5
Consultation reason	Illness	22,958	37.4
	Medical check-up	15,001	24.4
	Prescription, certificate or referral	12,123	19.7
	Other	11,054	18.0
	Missing	313	0.5

Table 10. Distribution of GP characteristics in the Quality and Costs of Primary care in Europe (QUALICOPC) study sample with 31 countries, n = 7,120

		n	%
Age	21–39	1,095	15.4
	40–64	5,578	78.3
	65 or over	370	5.2
	Missing	77	1.1
Gender	Male	3,395	47.7
	Female	3,697	51.9
	Missing	28	0.4
Practice location	Big (inner city)	2,137	30.4
	Suburbs or small town	2,477	35.2
	Urban-rural or rural	2,424	34.4
	Missing	82	1.2
GP accommodation	Solo practice	2,856	40.1
	Duo or group practice	4,194	58.9
	Missing	70	1.0
GP remuneration	Salaried	2,324	32.6
	Self-employed	4,621	64.9
	Mixed	72	1.0
	Missing	103	1.5
GP-perceived work-related stress	Agree	4,073	57.2
	Disagree	2,953	41.5
	Missing	94	1.3
GP-perceived effort-reward balance	Agree	3,354	47.1
	Disagree	3,676	51.6
	Missing	90	1.3
Mean consultation time (minutes, GP declared)			
	mean	14.5	
	SD	7.1	
	Range	0–120	
	Missing	240	
Mean number of face-to face consultations per day (GP declared)			
	mean	30.7	
	SD	16.0	
	Range	0–88	
	Missing	49	

Table 11. Distribution of the answers to the single-item question "After this visit, I feel I am able to cope better with my health problem/illness than before the visit", in the Quality and Costs of Primary care in Europe (QUALICOPC) study sample with 31 countries, by country, n = 61,458

	No		Don't know		No + don´t know		Yes		Missing		total
	N	%	N	%	N	%	N	%	N	%	N
Austria	84	5.3	192	12.0	276	17.3	1216	76.2	104	6.5	1596
Belgium	277	7.5	579	15.8	856	23.3	2611	71.1	207	5.6	3674
Bulgaria	230	11.6	381	19.3	611	30.9	1331	67.4	33	1.7	1975
Czech Republic	128	6.5	326	16.4	454	22.9	1500	75.7	28	1.4	1982
Denmark	68	3.6	265	14.1	333	17.7	1407	74.8	140	7.4	1880
Estonia	52	4.6	273	24.2	325	28.9	754	67.0	47	4.2	1126
Finland	36	2.7	233	17.3	269	20.0	900	66.9	**177**	**13.2**	1346
Germany	114	5.4	277	13.1	391	18.5	1683	79.5	44	2.1	2118
Greece	235	12.0	226	11.6	461	23.6	1474	75.4	21	1.1	1956
Hungary	279	14.4	357	18.4	636	32.9	1213	62.7	87	4.5	1936
Ireland	53	3.2	131	7.8	184	11.0	1299	77.4	196	11.7	1679
Italy	86	4.4	277	14.2	363	18.6	1474	75.5	116	5.9	1953
Latvia	121	6.2	456	23.5	577	29.8	1297	67.0	63	3.3	1937
Lithuania	212	10.5	360	17.9	572	28.4	1428	70.9	**13**	**0.6**	2013
Luxembourg	34	4.8	99	13.9	133	18.7	531	74.8	46	6.5	710
Malta	30	4.8	73	11.7	103	16.5	511	81.6	12	1.9	626

Netherlands	177	8.9	472	23.7	649	32.6	1170	58.8	172	8.6	1991
Norway	122	8.0	401	26.2	523	34.1	889	58.0	121	7.9	1533
Poland	221	11.2	284	14.4	505	25.6	1457	73.8	**12**	**0.6**	1974
Portugal	54	2.9	186	9.9	240	12.8	**1598**	**85.0**	43	2.3	1881
Romania	146	7.4	267	13.5	413	20.9	1547	78.3	16	0.8	1976
Slovakia	144	7.5	528	27.6	672	35.1	1159	60.5	85	4.4	1916
Slovenia	224	10.3	297	13.7	521	24.0	1571	72.4	79	3.6	2171
Spain	298	8.0	480	12.9	778	20.9	2882	77.3	69	1.9	3729
Sweden	122	15.6	188	24.0	**310**	**39.6**	**398**	**50.8**	75	9.6	783
Switzerland	127	7.1	241	13.4	368	20.5	1389	77.5	35	2.0	1792
Turkey	237	9.1	262	10.0	499	19.1	2100	80.3	**15**	**0.6**	2614
England	63	4.8	174	13.3	237	18.1	949	72.4	124	9.5	1310
Australia	23	1.9	102	8.4	125	10.3	1022	84.5	62	5.1	1209
Canada	233	3.3	641	9.2	874	12.5	5828	83.6	270	3.9	6972
New Zealand	37	3.1	72	6.1	**109**	**9.2**	975	81.9	106	8.9	1190
Total	4267	6.9	9100	14.8	13367	21.7	45563	74.0	2618	4.3	61458

NB: Lowest and highest proportion of each alternative are **bolded**

5.2.2.2 Multi-level modelling – explaining the variation between levels

In the null model (Model 0), 16% of the variance was at practice level and 6% at country level. With Model 1 (including all patient-level variables), only 0.96% of country variance and 20.3% of practice variance were explained. Almost all patient variables in the Model 1 had a statistically significant association with the dependent variable. Including all patient-level variables in the model explained a higher proportion of the level variances. Thus, all the variables were kept in the model.

Table 12. Comparison of odds ratios (ORs) of country-level variables, when included one by one in the logistic regression model, adjusted for patient- and GP-level variables, in the Quality and Costs of Primary care in Europe (QUALICOPC) study sample with 31 countries, n = 48,416

	OR	p	95%CI
Gatekeeping (referred to non-gatekeeping countries)	1.46	0.15	0.92-1.80
Primary health care structure (PHAMEU variables)			
Governance	1.02	0.78	0.87-1.19
Economic condition	1.09	0.28	0.93-1.28
Workforce development	0.96	0.66	0.80-1.15
Total structure	1.02	0.81	0.86-1.20
Cultural Dimensions (VSM2013 variables)			
Power Distance	0.88	0.14	0.75-1.04
Individualism vs Collectivism	1.21	0.03	1.02-1.43
Masculinity vs Femininity	0.87	0.08	0.72-1.02
Uncertainty Avoidance	0.84	0.03	0.72-0.99
Long-Term vs Short-Term Orientation	1.26	0.003	1.08-1.46
Indulgence vs Restraint	0.98	0.81	0.82-1.16
QUALICOPC Patient Values			
Enablement	0.87	0.13	0.73-1.04
Treated as a person	1.04	0.68	0.86-1.26
Knowing the background	0.93	0.39	0.77-1.10

CI = Confidence interval, PHAMEU = Primary Health Care Activity Monitor in Europe, VSM2013 = Values Survey Module 2013, QUALICOPC = Quality and Costs of Primary Care in Europe

In Model 2 (GP/Practice variables added to the Model 1), the proportion of explained practice variance was decreased. This reflects that the true practice variance was masked in the simpler model. Furthermore, it increased the explained country variance to 14.2%. Consequently, all GP-level variables were kept in the model.

Finally, country variables were added one by one to Model 2. Comparisons of country-level variables are presented in Table 12. The three country variables best explaining the country-level variation were all cultural dimensions: Individualism vs Collectivism, Uncertainty Avoidance, and Long-Term vs Short-Term Orientation. All those three variables were included in the final model (Model 3).

Table 13 presents the level variances and proportion of explained variances in each model. With the Model 3, altogether 50.6% of the country variance and 18.4% of the practice variance could be explained.

Table 13. Level variances and proportion of explained variances of Models 0–3 in the Quality and Costs of Primary care in Europe (QUALICOPC) study sample with 31 countries

	Model 0	Model 1	Model 2	Model 3
Country variance	0.2598	0.2573	0.2230	0.1284
Practice variance	0.661	0.5264	0.5398	0.5398
Country variance explained, %		0.96	14.2	50.6
Practice variance explained, %		20.3	18.4	18.4

5.2.2.3 Logistic regression – variable associations with patient enablement

Table 15 (p.96-98) presents the results of all the logistic regression results of Models 1–3. In the final model (Model 3), several independent variables had statistically significant associations with the dependent variable.

When regarding patient-level variables, some patient characteristics were associated with decreased odds for lower enablement: older age, female gender and household income around average. Furthermore, positive perception of patient involvement, patient satisfaction, continuity of care, access to care, no previous experience of discrimination, and propensity to seek care among GPs were associated with decreased odds of lower enablement. Of these, higher patient satisfaction had the strongest association (OR 0.54, $p<0.001$, 95%CI 0.52-0.56). In contrast, poorer self-perceived health, and higher educational level were associated with higher odds for lower enablement. Patients who were retired or not working (students, unemployed patients, patients unable to work due to illness, and homemakers), and patients whose consultation reason was other than illness, were more likely to report lower enablement. In addition, patients who reported not trusting doctors in general had increased odds for lower enablement (OR 1.58, p<0.001, 95%CI 1.41-1.77).

From GP/practice-level variables, a higher number of face-to-face consultations was associated with decreased odds of lower enablement (OR 0.82, p=0.02, 95%CI 0.70-0.97). Instead, a mixed urban-rural or rural practice location was associated with increased odds of lower enablement (OR 1.12, p=0.01, 95%CI 1.03-1.22).

From three country-level variables in the model, only Long-Term Orientation (LTOWVS) had a statistically significant association with the dependent variable (OR 1.27, p<0.001, 95%CI 1.11-1.46). This indicates that patients in more long-term oriented cultures have decreased odds of lower enablement.

The median odds ratios (MORs) for practice and country levels were 2.01 and 1.41, respectively, and can be compared to the odds ratios of the independent variables. Thus, the effect of the clusters (the differences between practices or countries) on patient enablement is greater than most of the independent variables. The MORs for all the Models 0–3 are presented in Table 14.

Table 14. Cluster-specific associations, i.e. median odds ratios (MORs) of the Models 0–3 in the Quality and Costs of Primary care in Europe (QUALICOPC) study sample with 31 countries

	Model 0	Model 1	Model 2	Model 3
MOR for country level	1.63	1.62	1.56	1.41
MOR for practice level	2.17	2.00	2.01	2.01

Table 15. Results of multi-level logistic regression analyses (Models 1–3): the odds ratio (OR) to respond negatively to the dependent question ´After this visit, I feel I can cope better with my health problem/illness than before the visit´. The Quality and Costs of Primary care in Europe (QUALICOPC) study sample with 31 countries

	Model 1, N = 53,738			Model 2, N = 48,416			Model 3 - Final model, N = 48,416		
PATIENT-LEVEL VARIABLES	OR	p	95%CI	OR	p	95%CI	OR	p	95%CI
Patient characteristics									
Patient´s age									
under 40 years	ref								
40–64 years	0.84	<0.001	0.79-0.89	0.84	<0.001	0.7-0.89	0.84	<0.001	0.79-0.89
over 65 years	0.80	<0.001	0.71-0.88	0.81	<0.001	0.73-0.90	0.81	<0.001	0.73-0.90
Patient´s gender									
Male (ref) vs Female	0.88	<0.001	0.84-0.93	0.87	<0.001	0.83-0.92	0.87	<0.001	0.83-0.92
Ethnicity									
Native	ref								
Second generation immigrant	1.06	0.30	0.94-1.19	1.07	0.28	0.95-1.21	1.07	0.28	0.95-1.21
First generation immigrant	0.88	0.02	0.79-0.98	0.91	0.07	0.82-1.01	0.90	0.07	0.81-1.01
Language skills									
Fluently/ native speaker level	ref								
Sufficiently/Moderately/Poorly/Not at all	1.00	0.95	0.80-1.08	1.00	0.96	0.93-1.08	1.01	0.89	0.93-1.09
Chronic disease									
No (ref) vs Yes	0.98	0.58	0.93-1.08	0.98	0.61	0.93-1.05	0.98	0.61	0.93-1.05
Self-perceived health									
Very good/good (ref) vs Fair/poor	1.28	<0.001	1.21-1.36	1.29	<0.001	1.22-1.37	1.29	<0.001	1.22-1.37
Education									
No/primary level	ref								
Upper secondary level	1.04	0.25	0.97-1.11	1.04	0.24	0.97-1.12	1.04	0.25	0.97-1.11
Post-secondary level	1.09	0.01	1.01-1.18	1.09	0.03	1.01-1.18	1.09	0.03	1.01-1.18
Household income (self-estimation)									
Below average	ref								
Around average	0.90	<0.001	0.85-0.95	0.91	0.004	0.86-0.97	0.91	0.003	0.86-0.97
Above average	0.91	0.04	0.83-0.99	0.93	0.15	0.85-1.02	0.93	0.15	0.85-1.02

	OR	p	95%CI	OR	p	95%CI	OR	p	95%CI
Occupation									
Working, including civil service and self-employment	ref								
Retired	0.93	0.14	0.85-1.02	0.93	0.13	0.85-1.02	0.93	0.13	0.85-1.02
Student, unemployed, unable to work, mainly homemaker	1.05	0.10	0.99-1.12	1.07	0.04	1.00-1.14	1.07	0.04	1.00-1.14
Consultation reason									
Illness	ref								
Medical check-up	1.04	0.28	0.97-1.10	1.06	0.08	0.99-1.14	1.06	0.08	0.99-1.13
Prescription, referral or certificate	1.38	<0.001	1.30-1.48	1.40	<0.001	1.31-1.51	1.40	<0.001	1.31-1.51
Other	1.18	<0.001	1.10-1.26	1.12	<0.001	1.11-1.29	1.20	<0.001	1.11-1.29
Patient perceptions of consultation									
Patient involvement									
No (ref) vs. Yes	0.58	<0.001	0.55-0.62	0.58	<0.001	0.54-0.62	0.58	<0.001	0.54-0.62
Trust in doctors									
Agree (ref) vs Disagree	1.57	<0.001	1.41-1.75	1.58	<0.001	1.41-1.78	1.58	<0.001	1.41-1.77
Patient satisfaction (scale with 7 variables)*	0.53	<0.001	0.52-0.55	0.54	<0.001	0.51-0.55	0.54	<0.001	0.52-0.56
Continuity of care (scale with 3 variables)	0.70	<0.001	0.68-0.73	0.70	<0.001	0.67-0.72	0.70	<0.001	0.67-0.73
Perceptions of access to care (scale variable with 5 variables)	0.85	<0.001	0.82-0.88	0.84	<0.001	0.80-0.87	0.84	<0.001	0.81-0.87
No previous discrimination (scale with 4 variables)	0.97	0.01	0.94-0.99	0.96	0.002	0.93-0.98	0.96	0.002	0.93-0.98
Propensity to seek care (severe complains)	0.86	<0.001	0.84-0.88	0.86	<0.001	0.83-0.88	0.86	<0.001	0.83-0.88
Propensity to seek care (minor complains)	0.89	<0.001	0.87-0.92	0.89	<0.001	0.87-0.91	0.89	<0.001	0.86-0.91
Perception of communication	1.05	0.01	1.01-1.08	1.03	0.08	0.97-1.07	1.03	0.07	0.99-1.07
GP LEVEL variables									
GP age									
21–39				ref					
40–64				1.05	0.27	0.96-1.15	1.05	0.29	0.96-1.15
65 and over				1.09	0.29	0.93-1.29	1.09	0.32	0.92-1.28
GP gender									
Male (ref) vs. Female				0.98	0.51	0.91-1.05	0.98	0.53	0.92-1.05
GP accommodation									
Solo practice (ref) vs. Duo or group practice				0.97	0.50	0.89-1.05	0.98	0.58	0.91-1.06

	OR	p	95%CI	OR	p	95%CI	OR	p	95%CI
GP practice location									
Big inner city				ref					
Suburbs or small town				1.07	0.08	0.99-1.17	1.08	0.07	0.99-1.17
Urban-rural or rural				1.12	0.01	1.03-1.22	1.12	0.01	1.03-1.22
GP remuneration									
Salaried				ref					
Self-employed				1.13	0.04	1.01-1.26	1.11	0.08	0.99-1.24
Mixed				0.94	0.71	0.66-1.33	0.92	0.63	0.64-1.30
Mean consultation time (GP declared)									
0–4 minutes				ref					
5–9 minutes				0.82	0.21	0.60-1.12	0.82	0.21	0.60-1.11
10–14 minutes				0.82	0.19	0.60-1.11	0.82	0.19	0.60-1.11
15–29 minutes				0.76	0.08	0.56-1.04	0.76	0.09	0.56-1.04
over 30 minutes				0.71	0.05	0.50-1.00	0.71	0.05	0.50-1.01
Mean number of face-to face consultations (GP declared)									
0–14				ref					
15–29				0.91	0.17	0.80-1.04	0.91	0.19	0.80-1.04
30–44				0.90	0.17	0.78-1.04	0.91	0.18	0.78-1.05
45 or more				0.82	0.02	0.70-0.97	0.82	0.02	0.70-0.97
GP-perceived work-related stress									
Agree (ref) vs Disagree				1.02	0.45	0.96-1.10	1.03	0.43	0.96-1.10
GP-perceived effort-reward imbalance									
Agree (ref) vs Disagree				1.00	0.99	0.94-1.07	1.00	1.00	0.93-1.07
Collaboration with other providers (scale)				1.02	0.42	0.98-1.06	1.02	0.38	0.98-1.06
Skill mix (scale)				0.95	0.26	0.88-1.03	0.96	0.25	0.88-1.03
Technical procedures (scale)				1.00	0.88	0.94-1.05	1.00	0.98	0.95-10.6
COUNTRY LEVEL variables									
Individualism vs Collectivism (towards individualism)							1.11	0.26	0.93-1.32
Uncertainty Avoidance (towards uncertainty avoiding)							0.88	0.15	0.74-1.04
Long-term vs Short-Term Orientation (towards short-term orientation)							1.27	<0.001	1.11-1.46

Note: Statistically significant ORs that diminish or increase the odds of responding negatively to the dependent question are marked with green and yellow, respectively. ref = reference category

*=scale variables are presented as z-scores

6 DISCUSSION

6.1 Main results

The main results of this study could be divided into two: the results related to measuring patient enablement either with the Patient Enablement Instrument or a single-item measure, and the results related to patient enablement, measured with a single-item measure Q1 (original version).

According to the findings of this study, the PEI shows good acceptability and content validity, good construct validity, high internal consistency, and moderate to low reliability among Finnish health care centre patients. The single-item measure Q2 shows good criterion validity compared to PEI. The single-item measure Q1 (Pirkanmaa version) has somewhat weaker properties, but seems to adequately identify patients with lower PEI scores. All three of these measurements could be used in practice. However, the single-item measure Q2 (´As a result of your visit to the doctor today, do you feel you are able to cope with your illness…´ Possible answers: ´much better / better / same / less / not applicable´) seems to have the most attractive potential for measuring patient enablement in Finnish primary health care.

An analysis of a large international dataset including a single-item measure for patient enablement shows rather large variation in patient enablement responses across countries, practices and patients. This variation is to a large extent due to cultural differences. Several independent variables show statistically significant associations with patient enablement, but the strength of the associations stays rather low. In general, the effect of being included in a specific cluster (practice or country) seems stronger than the effect of any of the independent variables.

6.2 Study population

In the Patient Enablement in Pirkanmaa study, the study sample was intended to be the total sample of patients who visited the health care centres during one week. According to the information derived from the ICT system of the health care centres, we managed to reach 79.3% of all the patients heading for GP appointments. The response rate was high (67.2% of eligible patients) and the collected dataset was larger than originally planned. The participants in the study are patients who actually had an appointment with a GP in a health care centre. When comparing them to the average users of Finnish health care centres, they match fairly well, with a slight overrepresentation of female and elderly patients (163). With this kind of study setting, we are not able to compare participants to non-participants. In addition, the selection process of health care centres was not random but a ´convenient sample´, with municipalities in both urban and rural areas and with different population structures.

In the QUALICOPC study, the goal was to gather a random sample of GPs and their patients from each participating country. The GP response rate varied from 6% to 79%, and getting a random sample of GPs was realised in only two-thirds of the countries (152). In Finland, the response rate of GPs remained exceptionally low and complementary recruitment methods were used. However, the current sample of GPs represents the national GP age and gender profile rather well (28). In addition, the sample of patients is large including patients from all age groups and from both urban and rural areas.

6.3 Methods

In the Patient Enablement in Pirkanmaa study, the methods for assessing the validity and reliability of the PEI and the single-item measures were chosen using the COSMIN Taxonomy (74,75) and COSMIN Checklist for assessing the methodological quality of studies on measurement properties of health status measurement instruments (76,77). This was in order to achieve more thorough approach and higher quality. Several different statistical methods were used to enhance all desired aspects.

When designing and conducting the study, the recently published COSMIN methodology for evaluating content validity (78) was not yet available. In content validity assessment interviews in this study, mostly open-ended questions were used, and the participants were encouraged to speak freely at any point of the interview. However, it might have been more appropriate to use more specific and structured questions, as in a recent study concerning the face validity of the PEI (101). That kind of approach might have revealed the non-discriminative scale of Q1 (Pirkanmaa version) earlier.

The wording and scaling of single-item question Q1 were adjusted between the QUALICOPC and the Patient Enablement in Pirkanmaa studies – two words were changed and the scale was expanded. In addition, the dichotomisation procedure of Q1 (Pirkanmaa version) in Publication II may have caused a bias. These changes affect the comparison of results between those two studies.

The literature research showed that very few measurements related to desired topics had undergone an assessment of their validity and reliability in the Finnish context. Thus, the process of developing the study questionnaires was more ´an expert opinion´. For example, no information of the validity or reliability of the ´comparison questions´ in Finnish context could be found. However, these questions had been used in earlier studies (131,164). Since these questions were found relevant to the topic, they were included in the questionnaires.

In the QUALICOPC study, the questionnaire development process was thorough. It was based on an exhaustive literature search and several consensus rounds (131). With the diverse questionnaires, several aspects of primary health care, and perspectives on it, could be evaluated. On the other hand, the structured nature of the questionnaires could leave too little room for taking into account different health care systems. For instance, some of the questions were not applicable for all countries, or their reliability was questioned after primary analyses (the QUALICOPC handbook for national coordinators). In addition, questions considering cultural aspects were not included in the questionnaires.

By including other datasets (PHAMEU and VSM2013) in the QUALICOPC data, a variety of structural and cultural aspects could be taken into account in this study. Unfortunately, cultural dimensions scores for three countries included in the QUALICOPC data were not included in the VSM2013 data and thus those countries were left out from the analyses.

The PHAMEU data provides an overview of primary health care in 31 European countries. The background of the PHAMEU framework is evidence-based and comprehensive. On the other hand, data availability in some countries has been a limitation. (28)

Hofstede´s model of cultural dimensions are some of the most cited in the area of social sciences (165,166). At the same time, the model has been accused of being somewhat irrelevant and outdated (165). The critics especially claim the model is too narrow and generalizing (165–167). Also, the validity of some of the dimensions has been questioned (168). However, several replication studies or other analyses have been conducted that support the dimension model (42,166). Geert Hofstede himself has stated that ´since dimensions are imagined, not 'out there', there can be many more. Any study will reveal its own pattern´ (43).

6.4 PEI and the single-item questions as measurements (I and II)

The findings about the PEI as a measure are mainly in line with previous literature. Although it has been suggested that the PEI could might lack face validity for some patients (101), the PEI has been well accepted in different languages and countries (89,91–93,95,99). Furthermore, the construct validity testing (factor analysis) confirmed the unidimensional structure of the instrument, as found earlier (7,92). The PEI seems to measure a different concept than, for example, perceived benefit or satisfaction. Also, high internal consistency (7,86,87,92,93,95) and low test-retest reliability (95,97,100) were expected findings. To our knowledge, this is the first time calculations of the standard error of measurement for the PEI have been presented. However, it reflects mostly the large standard deviation of the PEI score, which has been seen in earlier studies as well (91,93,95,97,103,104,115).

There are no previous publications about the criterion validity of the single-item questions Q1 and Q2. The theoretical frame supports the idea of using a single-item question when measuring unidimensional concepts (68). Thus, highly unidimensional patient enablement would be suitable for single-item measures. Using single-item measures could be more convenient for the respondent and save time, and space on the questionnaire forms.

The single-item questions Q1 and Q2 are almost identical, with very similar wording. Nevertheless, Q1 is broader including ´symptom/illness´, whereas Q2 includes only ´illness´. This could cause patients who do not feel they have an illness to answer Q1 and Q2 differently.

Both Q1 and Q2 are transitional, measuring change in the patient´s feelings as a result of the visit to a doctor. However, their scales are different, with a four-point Likert scale in Q1 and PEI-alike scale in Q2. Scale differences are one probable reason for the differences in correlations with the PEI and the comparison questions.

In addition, when compared to the PEI, both these single-item measures put an emphasis on comparing the situation before and after the visit (…´than before the visit´). In the PEI, this comparison is more built-in (´as a result of the visit…´).

The test-retest reliability of the PEI and the single-item measures is low, indicating that feelings of enablement – measured with any of the used measurements – seem to diminish after a rather short period of time. This phenomenon has been previously found with the PEI (95,97) as well as other HR-PROs (100). This could be due to a true ´dilution´ of experience (95,97), not due to the measurement itself. Also, scores of the comparison questions in this study diminished statistically significantly over time (data not shown). The overall experience is probably at its highest immediately after the consultation. The ´dilution´ of experience could also explain the phenomenon of certain patients making repeated appointments. Perhaps certain patients need regular visits to the doctor in order to achieve or strengthen enablement and cope better in their everyday lives. In addition, the transitional scale – measuring the change in the patient's perception as a result of the consultation – could affect the evaluation over time (101,169).

6.5 Factors associated with patient enablement (I, III and IV)

In line with previous findings, positive perceptions of patient satisfaction (86,102,107) and doctor-patient communication (90,105,114,115) were associated with better enablement in the Finnish subset of the QUALICOPC study. For instance, positive answers to questions reflecting patient satisfaction (´I would recommend this doctor to a friend or a relative´ and ´This doctor doesn't just deal with the medical problems but can also help with personal problems´) had the strongest positive association on enablement. The patient's perception that the doctor is able to deal with other problems than just medical ones may reflect the GP's holistic approach and good patient-doctor partnership, previously suggested to promote enablement (82,97).

In the larger dataset with 31 countries, several patient characteristics and patient perceptions, along with a few GP- and country-level variables, showed statistically significant associations with lower patient enablement. Of those, a patient´s older age and female gender decreased the odds of lower enablement. This was against the study hypothesis which was based on the contradictory evidence in the literature (86,90–93,104). However, in a large systematic review, older age is related to higher patient satisfaction (170), and the mechanism behind achieving enablement might be similar. It might be that – globally – young patients are more critical towards care than the elderly, leading to lower enablement. In addition, elderly patients might have built a relationship with their GPs, after seeing them more often, and thus more easily experience enablement. Furthermore, women tend to have a more active attitude towards treatment and health (171), and this could also promote reported enablement after a consultation.

When comparing results of the Patient Enablement in Pirkanmaa study, the QUALICOPC study and previous evidence, some results seem contradictory. First, rather strong evidence show that longer consultations associate with higher enablement (7,86,99,105,111–113). However, the mean PEI scores and distributions in the Patient Enablement in Pirkanmaa study were very similar to those from the UK (7,86,90), despite rather large differences in average consultation times, 5–10 minutes in the UK vs 15–20 minutes in Finland (7,34). Additionally, in the QUALICOPC study, a GP-declared larger number of patients during a regular work day was associated with decreased risk of lower enablement. These results indicate that the mechanism behind enablement must be something other than just the minutes spent.

The second finding contradictory to the literature was that the number of reasons or the reason itself did not make a difference to PEI scores in the Patient Enablement in Pirkanmaa study. This could be considered as a positive feature; it seems that a patient could achieve higher enablement independent of the consultation reason. On the other hand, in the larger QUALICOPC study, the reason for consultation (consultation to get a prescription or referral vs consultation for illness) was associated with lower enablement. This difference might reflect the different cultures of health care service use. Perhaps not all patients need to be enabled, or it is dependent on the culture.

Third, against the evidence in the Finnish subset of the QUALICOPC study and in literature (90,105,114,115) positive perceptions on doctor-patient communication were not associated with enablement in the larger QUALICOPC dataset. All these three contradictions suggest the idea that at least some of the mechanisms behind enablement are not universal but instead are culture-dependent.

6.6 Patient enablement variation (I, III and IV)

In the Patient Enablement in Pirkanmaa study, there was a large variation in scores – a phenomenon found in previous studies (91,93,95,97,103). In our study, over a quarter (27.1%) of Finnish patients reported 0 points in the PEI, reflecting no change regarding feelings of ability and coping after the consultation with the GP. In earlier studies, the proportion of patients reporting 0 points ranged from 5% in Japan (93) to 55% in the Netherlands (96).

In the subset of 31 countries in the QUALICOPC study, the proportion of respondents reporting lower patient enablement varied from 9.2% to 39.6%. Cultural dimensions were the best variables to explain the variation between countries. This is, to our knowledge, being evaluated for the first time. With the final model, a half of the variance between countries could be explained.

The structure of the health care system seems not to be important when explaining enablement variation between countries, unlike hypothesised. The only country-level variable that had a statistically significant association with patient enablement was the cultural dimension Long-Term Orientation (LTOWVS), with an interpretation that people in more long-term oriented cultures have decreased odds of lower enablement. This dimension deals with change; in long-term oriented cultures, ´the basic notion of the world is that it is in flux, and preparing for the future is needed´ (43). In short-term oriented cultures, ´the world is essentially as it was created, so the past provides a moral compass´ (43). Among countries in this study, Ireland and the UK score towards Long-Term orientation (scores 24 and 21, respectively), and Estonia and Germany score towards Short-Term orientation, with scores 82 and 83, respectively (43). Finland has a rather low score 38, reflecting Long-Term Orientation (43). To our knowledge, there is no other evidence of a role of this dimension in the health care context. Perhaps people in more long-term oriented cultures adopt a more flexible attitude on changes in health as well. Previous research has shown that cultural values are related to different aspects of primary care (172).

In general, patient characteristics and patients' perception of the consultation do not explain the variation between countries. However, they do explain variance between practices to some extent. Furthermore, although adding GP-level variables to the models improved the model, the overall explained practice variance stayed rather low – over 80% of variance stayed unexplained. It is possible that the variables available in the QUALICOPC framework may not have included all the potentially important factors related to practices and GPs. Particularly, personal characteristics of a GP could have a strong influence on enablement; it is assumed that there are ´high-enablers´ and ´low-enablers´ among GPs (86).

6.7 Strengths and limitations

The Patient Enablement in Pirkanmaa study was designed using the COSMIN Taxonomy (74,75) and COSMIN Checklist for assessing the methodological quality (76,77), and with these guidelines, a comprehensive approach was possible. The statistical power calculation demands of the study population were met, and the study sample could be regarded overall as satisfactory. In addition, this is the first study to evaluate the criterion validity of the single-item measures of patient enablement.

A major strength in the QUALICOPC study is the use of robust statistical analyses, namely multi-level modelling that takes into account the clustered nature of the data. The study population includes large samples of GPs and their patients from several countries. As the respondents were interviewed right after their consultation with a GP, they are not representative of the population of the countries, but given the large number of patients in each country, they will be representative of the people who visited a GP.

The limitations of Patient Enablement in Pirkanmaa study include using a non-randomised sample of health care centres and a possible selection bias in patient recruitment process. In addition, the pilot study would have improved from a more detailed structure. Furthermore, despite the large variety of statistical methods used, with a cross-sectional study design, the elements of responsiveness could not be assessed. Assessments of interpretability and cross-cultural validity were not included in the study design. Criterion validity assessment was applicable only for the single-item measures, because the PEI itself could be regarded as a gold standard of measuring enablement.

The QUALICOPC framework was designed to study and compare primary health care properties and patient perceptions between countries on a large scale, not patient enablement in itself. Therefore, the measurement was a single-item measure Q1 (original version) and not the "gold standard" PEI with six questions. Furthermore, this single-item measure had not undergone a strict validation process (131). This limits the generalisability of the results. In addition, some potential factors were not included in the study questionnaires – for example, more detailed data of GP personal characteristics or actual time consumed in the consultation.

Additionally, there could be a circularity phenomenon for all perceptual patient variables, such as patient satisfaction and trust to doctors. Also, we lost observations due to missing values and merging several datasets from different studies. Lastly, since this is a study about associations, conclusions in terms of causality cannot be drawn.

6.8 Clinical implications

The PEI seems to be an applicable tool for measuring patient enablement in Finnish health care centres when used immediately after the GP appointment. Along with, for example, patient satisfaction measurements, the PEI could be used as a quality measurement, in order to gain a broader understanding of patients´ perspectives on quality of care.

Furthermore, patient enablement could be measured with Q2, a single-item measure. This measure could be rather easily introduced in Finnish health care centre context. The single-item form of Q2 could be suitable for text message queries, for example, after GP appointments.

Along with Q2, the single-item measure Q1, developed originally in the QUALICOPC study, seems to identify well the patients with lower patient enablement scores. These patients might benefit from different interventions or a different health service focus. Thus, the single-item measures Q2 and Q1 might serve as a tool for developing health care services.

The results of this study put an emphasis on the validation process of the measures used in health care. Before using measurements for clinical use, their psychometric properties and possible limitations should be known.

The results of this study imply that the structure of the primary care system is not related to enablement, but a dimension of national culture is. Thus, probably at least some of the mechanisms behind patient enablement are culture-dependent. Thus, GPs and researchers should be aware of the potential importance of cultural aspects, particularly when comparing health survey results between countries and adopting measurements across countries. The relationships with specific characteristics of health systems and cultural characteristics should be further explored, before using PROMs as indicators for health system performance.

Patient enablement is a goal worth pursuing for all patients, in order to ensure an experience of coping and understanding. Doctors should aim to strengthen patient enablement, not only as a measure of quality but also as an important issue in itself.

Recognising factors that associate with lower enablement – for example patients´ lower self-perceived health – may help doctors focus on the patients who may need more attention or actions in order to achieve enablement. Practising skills related to patient-centred consultation and patient involvement, as well as improving continuity and access to care may contribute to better patient enablement across countries.

6.9 Future research perspectives

The association between national culture and enablement raise a question about culture-related mechanisms behind enablement. With international collaboration, this issue could be possibly be explored. Qualitative research would increase the understanding of the possible enablement mechanisms. It would be interesting to explore the patients´ expectations and appreciation of enablement. In addition, a longitudinal study setting with several appointments by the same patients and GPs would produce knowledge about responsiveness of the PEI and the single-item measures. It is not yet known whether the PEI could be used for a long-perspective quality indicator for individual practices, for example. Studying broader use of the single-item measure Q2 in clinical practice, perhaps along with patient satisfaction instrument, would be of interest. To date, associations between patient enablement and clinical outcomes are sparsely known. Furthermore, the association of the patient´s own self-confidence and coping strategies with patient enablement, as well as the impact of family and friend support on patient enablement, would be worth investigating.

7 CONCLUSIONS

On the basis of this study, the following conclusion could be drawn:

1) Studied among Finnish health care centre patients, the Patient Enablement Instrument (PEI) has good content and construct validity, high internal consistency, low test-retest reliability, and moderate measurement error.

2) Patient enablement could be measured with a single-item question. The measure Q2 (´As a result of your visit to the doctor today, do you feel you are able to cope with your illness…´ Possible answers: ´much better / better / same / less / not applicable´), which is already part of the PEI questionnaire, has good content, construct, and criterion validity, and rather good reliability.

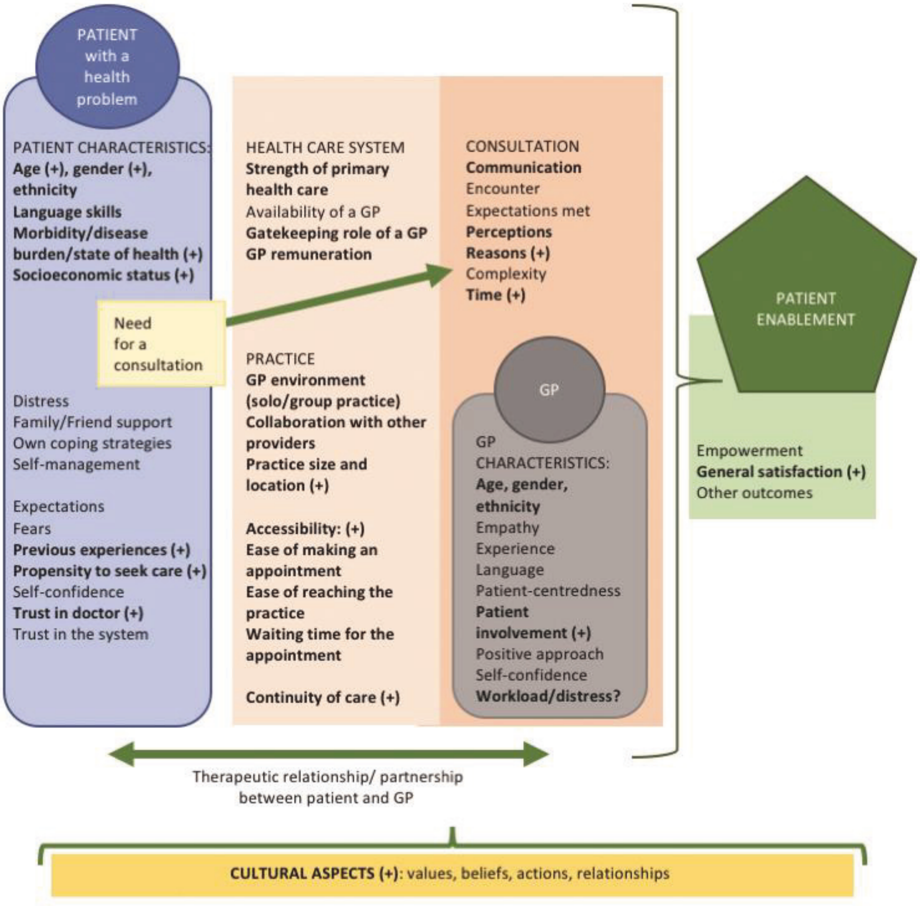
3) Measured using a single-item question, patient enablement in Finland is associated with patient satisfaction and doctor-patient communication.

4) In the international context, measured using a single-item question, cultural dimensions explain the patient enablement variation between countries to a large extent. In addition, several patient characteristics have significant associations with patient enablement. However, the effect of a cluster (the fact that a patient visits a certain practice and lives in a certain country) is larger than the effect of any independent variables.

7.1 Patient enablement process

Based on the literature, experience in practice, and the results of this study, the process of patient enablement could be seen as the interaction of patient characteristics and actions (´who the patient is and how (s)he acts´), GP and practice characteristics (´who the GP is and how and where (s)he acts´), their encounter (´what happens in the consultation´) and environment (the health system but in particular the cultural environment). The outcome, in this case patient enablement, is dependent of all these factors. A conceptual figure of this process is presented in Figure 12. The variables included in this study are highlighted with bolding, and statistically significant associations are marked with (+).

Figure 12. A conceptual figure of the patient enablement process. Inspiration from Banerjee A, Sanyal D (117); Bikker AP, Mercer SW, Reilly D (111); Brusse CJ, Yen LE (109); Cohidon C, Wild P, Senn N (107); Denley J, Rao JN, Stewart A (105); Edwards A, Elwyn G, Hood K, et al. (100); Freeman GK, Rai H, Walker JJ, et al. (106); Freeman GK, Walker J, Heaney D, et al. (119); Heaney DJ, Walker JJ, Howie JGR, et al. (118); Howie JGR, Heaney DJ, Maxwell M (7); Howie JGR, Heaney DJ, Maxwell M, et al. (86); Hudon C, St-Cyr Tribble D, Bravo G, et al. (82); Kelly M, Egbunike JN, Kinnersley P, et al. (113); Kurosawa S, Matsushima M, Fujinuma Y, et al. (93); Kuusela M (94); Lam CLK, Yuen NYK, Mercer SW (92); Little P, Everitt H, Williamson I, et al. (114); McKinley RK, Fraser RC, Baker RH, et al. (102); Mead N, Bower P, Hann M. (89); Mead N, Bower P, Roland M. (90); Mercer SW, Fitzpatrick B, Gourlay G, et al. (112); Mercer SW, Jani BD, Maxwell M, et al. (88); Mercer SW, Neumann M, Wirtz M, et al. (116); Mercer SW, Reilly D, Watt GCM (108); Ozvacić Adzić Z, Katić M, Kern J, et al. (91); Pawlikowska TRB, Nowak PR, Szumilo-Grzesik W, et al. (99); Pawlikowska TRB, Walker JJ, Nowak PR, et al. (104); Pawlikowska TRB, Zhang W, Griffiths F, et al. (115); Rööst M, Zielinski A, Petersson C, et al. (95); Wensing M, Wetzels R, Hermsen J, et al. (98)



Note: variables taken account of in this study are **bolded**.
Variables with (+) sign showed significant associations with enablement.

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APPENDIX

Appendix 1.	Operationalization of variables in the Quality and Costs of Primary Care in Europe (QUALICOPC) study, used in Publications III and IV
Appendix 2.	Results of bivariate analyses in the Finnish QUALICOPC study (Publication III) and division into theme group models (Models 1-9)
Appendix 3.	Results of the multivariate theme group analyses in the Finnish QUALICOPC study (Publication III)
Appendix 4.	The Questionnaires in the Patient Enablement in Pirkanmaa Study

Appendix 1. Operationalisation of variables in the Quality and Costs of Primary Care in Europe (QUALICOPC) study, used in Publications III and IV.

PATIENT-LEVEL VARIABLES	Operationalisation
Patient characteristics	
Age	What is your year of birth?
Gender	Are you male or female?
Household income	Compared to the average household income of this country, would you say your household's income is: below average/average/above average?
Education	What is the highest level of education that you achieved? No qualifications obtained, pre-primary education, primary education or lower secondary level education/upper secondary level of education/post-secondary, non-tertiary education or higher
Ethnicity	Where were you born? AND Where was your mother born? In this country/In another EU country/In a European country outside the EU/North America, Australia or New Zealand/In another country
Language skills	How well do you speak an official language of this country? Fluently/native speaker level v. Sufficiently/Moderately/Poorly/Not at all
Chronic disease	Do you have a longstanding disease or condition such as high blood pressure, diabetes, depression, asthma? Yes/No
Self-perceived health	How would you describe your own health in general? Very good/Good vs. Fair/Poor
Reason for consultation	Because I was ill or did not feel well For a medical check-up To get a prescription/referral/medical certificate For a second opinion/other reason
Patient-perceived consultation variables	
Involvement	The doctor involved me in making decisions about treatment, no/yes
Trust	In general, doctors can be trusted, strongly disagree/disagree vs agree/strongly agree
Patient satisfaction (scale variable in Publication IV)	The doctor took sufficient time, no/yes I would recommend this doctor to a friend or relative, no/yes The doctor asked about possible other problems besides the one I came in for, no/yes This doctor doesn't just deal with medical problems but can also help with personal problems, no/yes The doctor was polite, no/yes

Patient-level variables, continues	Operationalisation
	The doctor asked questions about my health problem, no/yes
	People were polite and helpful at the reception desk, no/yes/don’t know†
Continuity of care (scale variable in Publication IV)	
	Do you have your own doctor? Yes, the one I just visited/Yes, but another doctor in this practice or centre vs Yes, but another doctor somewhere else/No, I do not have my own doctor
	This doctor knows my medical background, no/yes/don’t know†
	This doctor knows my living situation
Perception of access to care (scale variable in Publication IV)	
	The opening hours are too restricted, no/yes/don’t know†
	If I need a home visit I can get one, no/yes/don’t know†
	The practice is too far away from where I live or work, no/yes/don’t know†
	When I called this practice, I had to wait too long to speak to someone, no/yes/don’t know†
	I know how to get evening, night and weekend services, no/yes/don’t know) †
Previous negative experience: discrimination (scale variable in Publication IV)	
	The doctor or staff acted negatively to you (In the past 12 months), no/yes
	Other patients were treated better than you (In the past 12 months), no/yes
	The doctor or staff showed disrespect because of your ethnic background (In the past 12 months), no/yes
	The doctor or staff showed disrespect because of your gender (In the past 12 months), no/yes
Propensity to seek care from GP (scale variable in Publication IV)	
	Severe complaints: How important would it be for you to see the doctor if you had…. (7 alternatives from weight loss to severe worries)
	Minor complaints: Do you expect to benefit from a visit to a GP if you had… (9 alternatives from stomach problems to feeling nauseous)
Communication (scale variable in Publication IV)	
	The doctor was polite, no/yes
	The doctor listened carefully to me, no/yes
	The doctor hardly looked at me when we talked, no/yes (reverse coded)
	The doctor asked questions about my health problem, no/yes
	I couldn’t really understand what the doctor was trying to explain, no/yes (reverse coded)
PRACTICE-LEVEL VARIABLES	
GP characteristics	
GP age	What is your year of birth?
GP gender	Are you male or female?

Practice-level variables, continues	Operationalisation
Practice characteristics	
Practice location	How would you characterise the place you are currently practising? Large (inner) city vs suburbs/(Small) town vs Mixed urban-rural/Rural
GP accommodation	Do you work alone or in shared accommodation? Alone vs with other GPs/with medical specialists in shared accommodation
GP remuneration	As a GP, are you self-employed or in salaried employment? Salaried employment with centre or authority/Salaried employment with other GP vs Self-employed with contract(s) with health service, insurance or authority/Self-employed without contract
Consultation length	
Mean time for consultation	How long does a regular patient consultation in your office usually take? (minutes)
Mean number of face-to-face consultations per day	How many patient contacts do you have on a normal working day? (face-to-face in your office, number)
Work-related stress	
Perceived work-related stress	To what extent do you agree with the following statements: I have too much stress in my current job; Strongly agree/agree vs Disagree/strongly disagree
Effort-reward balance	To what extent do you agree with the following statements: In my work there is a good balance between effort and reward; Strongly agree/agree vs Disagree/strongly disagree
Collaboration with other providers (scale variable in Publication IV)	How often do you meet face-to-face with the following professionals (either professionally or socially): Other GP/Practice nurse/Ambulatory medical specialist/Hospital medical specialist/Pharmacist/Home care nurse/Midwife/Physiotherapist/Social worker/Dietician? Seldom or never/Every 1–3 months/More than once a month
Skills mix in workplace (scale variable in Publication IV)	Which of the following disciplines are covered in your practice/centre? Receptionist or medical secretary/Practice nurse/Community or home care nurse/Psychiatric nurse/Nurse practitioner (function between physician and nurse/Assistant for laboratory work/Manager of the centre or practice (not a physician)/Midwife/Physiotherapist/Dentist/Pharmacist/Social worker
Possibilities to perform minor technical procedures (scale variable in Publication IV)	To what extent are the following activities carried out in your practice population by you (or your staff) and not by a medical specialist? Wedge resection of ingrown toenail/Removal of sebaceous cyst from hairy scalp/Wound suturing/Excision of warts/Insertion of IUD/fundoscopy/Joint injection/Strapping an ankle/Cryotherapy (warts)/Setting up an intravenous infusion? (Almost) always/Usually/Occasionally/Seldom or never

COUNTRY-LEVEL VARIABLES	Operationalisation
Gatekeeping	See *Kringos DS, Boerma WGW, Hutchinson A, Saltman RB, editors. Building primary care in a changing Europe: Case studies. European Observatory on Health Systems and Policies; (c) World Health Organization 2015; 2015.*
Primary health care structure - PHAMEU variables	See *Kringos DS, Boerma WGW, Hutchinson A, Saltman RB, editors. Building primary care in a changing Europe: Case studies. European Observatory on Health Systems and Policies; (c) World Health Organization 2015; 2015.*
Governance	
Economic condition	
Workforce development	
Total structure	
Cultural Dimensions – VSM2013 variables	See *Hofstede G, Jan Hofstede G, Minkov M. Cultures and Organizations: Software of the Mind, Intercultural Cooperation and Its Importance for Survival. Cultures and Organizations. 2010.*
Power Distance	
Individualism vs Collectivism	
Masculinity vs Femininity	
Uncertainty Avoidance	
Long-Term vs Short-Term Orientation	
Indulgence vs Restraint	
QUALICOPC Patient Values	See *Schäfer WLA, Boerma WGW, Kringos DS, De Ryck E, Greß S, Heinemann S, et al. Measures of quality, costs and equity in primary health care instruments developed to analyse and compare primary care in 35 countries. Qual Prim Care. 2013;21(2):67–79.*
	How important are the following to you: Not important/Somewhat important/Important/Very important
Enablement	That I feel able to cope better with my health problem/illness after this visit
Treating as a person	That the doctor treats me as a person and not just a medical problem
Knowing the background	That this doctor knows important information about my medical background

† don't knows combined with no responses

GP = General Practitioner; IUD = Intra-uterine device; PHAMEU = Primary Health Care Activity Monitor in Europe; VSM2013 = Values Survey Module 2013

Appendix 2. Results of bivariate analyses in Finnish QUALICOPC study (Publication III) and division into theme group models (Models 1-9)

Variable	**n (%)**	**Missing n (%)**	**OR**	**CI (95 %)**	**p**
PATIENT FACTORS					
DEMOGRAPHIC FACTORS (Models 1 and 2)					
age	1149 (96.1)	47 (3.9)	1.007/year	1.00-1.02	0.065
gender	male 424 (36.5) / female 738 (63.5)	34 (2.8)	1.06	0.80 – 1.40	0.681
chronic illness	no 349 (30.0) / yes 814 (70.0)	33 (2.8)	1.05	0.78 – 1.42	0.73
state of health (patient´s opinion)	very good 55 (4.7)	32 (2.7)	(RC)**		
	good 405 (34.8)		0.62	0.29 – 1.31	0.213
	fair 597 (51.3)		0.71	0.34 – 1.49	0.364
	poor 107 (9.2)		0.42*	0.19 – 0.96	0.039
ethnicity (land of birth)	Finland 1142 (98.5) / Other 17 (1.5)	37 (3.1)	0.98	0.32 – 3.01	0.975
ethnicity (language skills)	native speaker 1070 (92.6) / other 87 (7.4)	41 (3.4)	**0.56***	**0.35 – 0.89**	**0.014**
education	pre-primary or primary or no qualifications 737 (64.2)	48 (4.0)	(RC)		
	upper secondary level 306 (26.7)		0.99	0.72 – 1.36	0.962
	post-secondary or higher 105 (9.1)		0.96	0.59 – 1.55	0.866
income	below average 461 (39.9)	41 (3.4)	(RC)		
	about average 613 (53.1)		1.32	0.99 – 1.78	0.056
	above average 81 (7.0)		1.23	0.70 – 2.16	0.469
working status	working, family business, civil service 291 (25.1)	36 (3.0)	(RC)		
	student, unemployed, mainly homemaker or unable to work due to illness 211 (18.2)		0.95	0.63 – 1.44	0.809
	retired 658 (56.7)		1.08	0.78 – 1.50	0.779

Variable	n (%)	Missing n (%)	OR	CI (95 %)	p
CONSULTATION FACTORS					
DOCTOR-PATIENT COMMUNICATION (Model 3)					
The doctor was polite	no 12 (1.0) /yes 1154 (99.0)	30 (2.5)	1.11	0.30 – 4.14	0.873
The doctor listened carefully to me	no 26 (2.2) / yes 1140 (97.8)	30 (2.5)	**2.95***	**1.35 – 6.35**	**0.007**
The doctor hardly looked at me when we talked	no 1041 (89.3) / yes 125 (10.7)	30 (2.5)	**0.60***	**0.40 – 0.90**	**0.013**
The doctor asked questions about my health problem	no 108 (9.3) / yes 1058 (90.7)	30 (2.5)	**2.55***	**1.67 – 3.84**	**<0.001**
I couldn´t really understand what the doctor was trying to explain	no 1076 (92.3) / yes 90 (7.7)	30 (2.5)	**0.60***	**0.38 – 0.96**	**0.033**
PATIENT SATISFACTION (Model 4)					
previous visits in past 6 months		55 (4.6)			
	This was the first time in past 6 months 303 (26.6)		(RC)		
	Once before this visit 276 (24.2)		1.28	0.86 – 1.90	0.222
	2 to 4 times before this visit 435 (38.1)		1.01	0.71 – 1.41	0.979
	5 times or more before this 127 (11.1)		0.76	0.48 – 1.21	0.244
The doctor took sufficient time	no 61 (5.2) / yes 1105 (94.8)	30 (2.5)	**1.96***	**1.14 – 3.37**	**0.015**
I would recommend this doctor to a friend or relative	no 42 (3.6) / yes 1124 (96.4)	30(2.5)	**5.30***	**2.81 – 10.0**	**<0.001**
The doctor asked about possible other problems besides the one I just came for	no 430 (36.9) / yes 736 (63.1)	30 (2.5)	**1.41***	**1.07 - 1.86**	**0.016**
This doctor doesn´t just deal with medical problems but can also help with personal problems	no 653 (57.3) / yes 487 (42.7)	56 (4.7)	**3.53***	**2.56 – 4.86**	**<0.001**

Variable	n (%)	Missing n (%)	OR	CI (95 %)	p
PREVIOUS EXPERIENCE: DISCRIMINATION (Models 5 and 7)					
The doctor or staff acted negatively to you (In the past 12 months)					
	no 1057 (91.6) / yes 97 (8.4)	42 (3.5)	**0.61***	**0.39 – 0.96**	**0.031**
Other patients were treated better than you (In the past 12 months)					
	no 1140 (98.9) / yes 13	43 (3.6)	0.35	0.12 – 1.04	0.058
The doctor was too much concerned about money (In the past 12 months)					
	no 1099 (95.2) / yes 56 (4.8)	41 (3.4)	0.90	0.48 – 1.67	0.732
The doctor or staff showed disrespect because of your ethnic background (In the past 12 months)					
	no 1131 (99.1) / yes 10 (0.9)	55 (46)	0.44	0.12 – 1.58	0.210
The doctor or staff showed disrespect because of your gender (In the past 12 months)					
	no 1145 (99.6) / yes 5 (0.4)	46 (3.8)	1.20	0.13 – 10.8	0.872
PREVIOUS EXPERIENCE: PRACTICE SAFETY (Models 6 and 7)					
In past 2 years, has a GP from this practice ever asked you about all the medication you take (also those prescribed by other doctors)?					
	no 529 (45.7) / yes 629 (54.3)	38 (3.2)	**1.41***	**1.07 – 1.85**	**0.014**
I thought tests or examinations were repeated unnecessarily (In the past 12 months)					
	no 1132 (98.0) / yes 23 (2.0)	41 (3.4)	0.38*	0.17 – 0.88	0.024
I thought I got the wrong medication or wrong dose (In the past 12 months					
	no 1104 (95.8) / yes 48 (4.2)	44 (3.7)	1.01	0.51 – 2.00	0.988
I thought I got incorrect results of a test or X-ray (In the past 12 months)					
	no 1139 (99.2) / yes 9 (0.8)	48 (4.0)	**0.24***	**0.06 – 0.89**	**0.033**
PREVIOUS EXPERIENCE: HEALTH PROMOTION (Model 7)					
In the past 12 months, has a GP from this practice talked to you about how to stay healthy? (For instance about diet, alcohol or smoking)					
	no 676 (58.4) / yes 482 (41.6)	38 (3.2)	**1.44***	**1.08 – 1.91**	**0.012**
SYSTEM FACTORS					
ACCESS TO CARE (Model 8)					
waiting time for the appointment		229 (19.1)			
	0–1 days 263 (27.2)		(RC)		
	2–7 days 237 (24.5)		1.15	0.76 – 1.75	0.517
	more than 7 days 467 (48.3)		0.89	0.63 – 1.27	0.518

Variable	**n (%)**	**Missing n (%)**	**OR**	**CI (95 %)**	**p**
waiting time for the appointment in the waiting room					
	less than 15 min 757 (66.8)	63 (5.3)	0.91	0.68 – 1.22	0.543
	more than 15 min 376 (33.2)				
CONTINUITY OF CARE (Model 9)					
having one´s own GP		43 (3.6)			
	yes, the one met today 656 (56.9)		(RC)		
	yes, but not met today 136 (11.8)		0.74	0.48 – 1.13	0.170
	no 361 (31.3)		**0.70***	**0.52 – 0.94**	**0.019**
The doctor had my medical records at hand					
	no 73 (6.3) / yes 1093 (93.7)	30 (2.5)	**2.06***	**1.26 – 3.39**	**0.004**
This doctor knows important information about my medical background					
	no 186 (16.1) / yes 968 (83.9)	42 (3.5)	**2.38***	**1.70 – 3.32**	**<0.001**
This doctor knows about my living situation					
	no 460 (39.9) /yes 693 (60.1)	43 (3.6)	**2.27***	**1.72 – 2.99**	**<0.001**

*=p<0.05
**RC= Reference category

Appendix 3. Results of the multivariate theme group analyses in the Finnish QUALICOPC study (Publication III).

Variable	n	Odds Ratio	95% CI	*P*
Patient factors				
Model 1: All the demographic factors (9 factors), n = 1119				
Language skills				
	Fluent 1036 / Not fluent 83	0.54*	0.34-0.87	.012
Model 2: Demographic factors significant in the bivariate analysis (state of health, language skills, income), n = 1137				
Language skills				
	Fluent 1053 / Not fluent 84	0.55*	0.34-0.88	.013
Consultation factors				
Model 3: Doctor-patient communication (5 questions), n = 1148				
Age				
	1148	1.009/y*	1.00-1.02	.023
The doctor hardly looked at me when we talked				
	No 1026 / Yes 122	0.56*	0.37-0.85	.006
The doctor asked questions about my health problem				
	No 106 / Yes 1042	2.76*	1.81-4.19	<.001
Model 4: Patient satisfaction (5 questions), n = 1097				
I would recommend this doctor to a friend or relative				
	No 39 / Yes 1058	4.05*	2.07-7.94	<.001
This doctor doesn't just deal with medical problems but can also help with personal problems				
	No 624 / Yes 473	3.43*	2.48-4.76	<.001
Model 5: Previous experience/discrimination (5 questions), n = 1114				
The doctor or staff member acted negatively toward you (in the past 12 months)				
	No 1020 / Yes 94	0.61*	0.38-0.96	.033
Model 6: Previous experience/practice safety (4 questions), n = 1121				
In past 2 years, has a GP from this practice ever asked you about all the medication you take (also those prescribed by other doctors)?				
	No 512 / Yes 609	1.44*	1.09-1.91	.010
Model 7: Previous experience (10 questions), n = 1090				
In the past 12 months, has a GP from this practice talked to you about how to stay healthy (for instance, about diet, alcohol, or smoking)?				
	No 637 / Yes 453	1.47*	1.09-1.97	.011
System factors				
Model 8: Access to care (2 questions), n = 930				
No significant factors found				
Model 9: Continuity of care (4 questions), n = 1110				
The doctor had my medical records to hand				
	No 63 / Yes 1047	1.77*	1.02-3.06	.042
This doctor knows important information about my medical background				
	No 178 / Yes 932	1.60*	1.09-2.33	.016
This doctor knows about my living situation				
	No 441 / Yes 669	1.90*	1.38-2.55	<.001

*p<0.05

All models are adjusted for age and gender.

Appendix 4. The Questionnaires in the Patient Enablement in Pirkanmaa Study

Potilaan kokemuksia yleislääkärin vastaanoton laadusta suomalaisessa perusterveydenhuollossa: pärjäämisen tunne ja hoidon saatavuus.

OSIO A. Kyselylomake ENNEN vastaanottoa.

● Seuraavat kysymykset koskevat arviotanne arjessa selviytymiseen liittyvissä asioissa. Vastatkaa väittämiin ympyröimällä (○) mielipidettänne parhaiten vastaava numero.

Yleinen arjessa selviytyminen	täysin samaa mieltä	jokseenkin samaa mieltä	jokseenkin eri mieltä	täysin eri mieltä	en osaa sanoa
Olen tyytyväinen elämääni	4	3	2	1	8
Suoriudun arjen askareista hyvin	4	3	2	1	8
Minulla on keinoja selvitä ongelmista	4	3	2	1	8
Minulla on läheisiä, jotka pystyvät auttamaan minua tarvittaessa	4	3	2	1	8
Terveyteen liittyvät asiat					
Pystyn huolehtimaan omasta terveydestäni	4	3	2	1	8
Minulla on riittävästi tietoa sairauksistani	4	3	2	1	8
Olen valmis ponnistelemaan terveyteni eteen	4	3	2	1	8
Haluan osallistua hoitoani koskevien päätösten tekoon	4	3	2	1	8
Minun ja minua hoitavan lääkärin yhteistyö sujuu hyvin	4	3	2	1	8
Toivon, että joku muu tekee hoitoani koskevat päätökset puolestani	4	3	2	1	8

● Seuraavat kysymykset koskevat <u>tämänpäiväistä</u> lääkärin vastaanottoa koskevia odotuksia. Vastatkaa väittämiin rastittamalla (X) sopivin vaihtoehto.

Kun menen tänään lääkärin vastaanotolle, odotan, että…	kyllä	ei	en osaa sanoa
saan lääkereseptin	☐	☐	☐
saan lähetteen erikoislääkärille	☐	☐	☐
saan lähetteen jatkotutkimuksiin	☐	☐	☐
saan lääkäriltä ohjeita, kuinka edistän terveyttäni	☐	☐	☐
lääkäri ottaa huomioon minun mielipiteeni hoitoa valitessaan	☐	☐	☐
saan lääkäriltä ohjeita, jotka auttavat minua selviytymään arjesta	☐	☐	☐

JATKUU KÄÄNTÖPUOLELLA!

- **Rastittakaa (X) sopivin vaihtoehto tai lisätkää vastaus annetulle viivalle.**

Mikä on tämänpäiväisen vastaanottokäyntinne syy tai syyt? Merkitkää kaikki soveltuvat vaihtoehdot.

Merkitkää lisäksi KAIKKEIN TÄRKEIN SYY numerolla 1.

	Käynnin syy/ syyt	**Tärkein syy**
Äkillinen oire tai sairaus……………………………………………………………………….	☐	___
Pitkäaikaisen oireen tai sairauden paheneminen…………………………………	☐	___
Sairauden/sairauksien seurantakäynti………………………………………………….	☐	___
Lääkärin tekemä toimenpide, esim. luomenpoisto tai lääkepistos niveleen	☐	___
Todistuksen tai lausunnon saaminen (esim. ajokorttitodistus, lausunto sairauslomaa, eläkettä tai kuntoutusta varten)	☐	___
Jokin muu syy/ syyt, mikä/mitkä? ______________________________ ____	☐	___

Milloin varasitte ajan tälle vastaanotolle?

En varannut aikaa	☐
Varasin ajan tänään	☐
Varasin ajan alle viikko sitten	☐
Varasin ajan 1 − 3 viikkoa sitten	☐
Varasin ajan yli 3 viikkoa sitten	☐

Saitteko ajan toivomanne lääkärin vastaanotolle?

Kyllä ☐ Ei ☐ Minulla ei ollut toivetta ☐

Saitteko ajan vastaanotolle teille sopivan ajan kuluessa?

Kyllä ☐ Ei ☐ Minulla ei ollut toivetta ☐

KIITOS VASTAUKSISTANNE!

OLKAA HYVÄ JA PALAUTTAKAA TÄMÄ LOMAKE AULASSA OLEVAAN PALAUTUSLAATIKKOON.

Potilaan kokemuksia yleislääkärin vastaanoton laadusta suomalaisessa perusterveydenhuollossa: pärjäämisen tunne ja hoidon saatavuus.

OSIO B. Kyselylomake lääkärin vastaanoton JÄLKEEN.

Tämä kysely on toinen osa Tampereen yliopistossa toteutettavaa yleislääketieteen väitöskirjatutkimusta, jossa tutkitaan perusterveydenhuollon vastaanoton laatua. Pyydämme teitä täyttämään tämän kyselylomakkeen lääkärin vastaanoton JÄLKEEN.

Kyselyyn vastaaminen on **vapaaehtoista**. Vastauksianne käsitellään luottamuksellisesti. Teitä ei voida tunnistaa kyselyn tietojen perusteella. Voitte milloin tahansa perua osallistumisenne.

● Rastittakaa (X) sopivin vaihtoehto tai kirjoittakaa vastaus viivalle.

Minkä nimisen lääkärin vastaanotolla kävitte äsken? ____________________________

(Tämä tieto muutetaan koodinumeroksi ja sitä käytetään **ainoastaan** tilastollisiin tarkoituksiin.)

Oletteko käynyt tämän lääkärin vastaanotolla aiemmin?

☐ En ☐ Kyllä, satunnaisesti ☐ Kyllä, useita kertoja ☐ En osaa sanoa

Kuinka monta kertaa olette asioinut (kenen tahansa) yleislääkärin vastaanotolla tässä terveyskeskuksessa viimeisen 12 kk aikana (tämänpäiväinen käynti poislukien)?

☐ en kertaakaan ☐ 1 – 2 kertaa ☐ 3 – 5 kertaa

☐ yli 5 kertaa ☐ en osaa sanoa

● Olkaa hyvä ja arvioikaa <u>äskeistä vastaanottokäyntiänne</u> rastittamalla sopivin vaihtoehto.

Tämän vastaanottokäynnin jälkeen kykenen	paljon paremmin	paremmin	entiseen tapaan	huonommin	en osaa sanoa
ymmärtämään sairauttani	☐	☐	☐	☐	☐
tulemaan toimeen sairauteni kanssa	☐	☐	☐	☐	☐
pitämään itseni terveenä	☐	☐	☐	☐	☐
selviytymään elämässäni	☐	☐	☐	☐	☐
tuntemaan terveydentilani	☐	☐	☐	☐	☐
auttamaan itseäni	☐	☐	☐	☐	☐

JATKUU KÄÄNTÖPUOLELLA!

- **Seuraavat kysymykset koskevat arviotanne <u>äskeisestä vastaanotosta.</u> Vastatkaa väittämiin ympyröimällä (◯) mielipidettänne parhaiten vastaava numero.**

Vastaanoton kulku	täysin samaa mieltä	jokseenkin samaa mieltä	jokseenkin eri mieltä	täysin eri mieltä	en osaa sanoa
Asian hoitamiseen oli riittävästi aikaa	4	3	2	1	8
Sain osallistua hoitoani koskevien päätösten tekoon	4	3	2	1	8
Sain toivomani lähetteen/reseptin tms.	4	3	2	1	8
Lääkärin kommunikaatio					
Lääkäri kuunteli minua	4	3	2	1	8
Lääkäri esitti kysymyksiä vaivastani	4	3	2	1	8
Lääkäri selitti asiat täsmällisesti	4	3	2	1	8
Sain riittävästi tietoa oireestani/sairaudestani	4	3	2	1	8
Sain riittävät jatkohoito-ohjeet	4	3	2	1	8
Kohtelu vastaanotolla					
Lääkäri kohteli minua kunnioittavasti	4	3	2	1	8
Lääkäri oli kiinnostunut minusta ja asiastani	4	3	2	1	8
Lääkäri otti minut vakavasti	4	3	2	1	8
Tyytyväisyys palveluun					
Lääkärin ammattitaito vaikutti hyvältä	4	3	2	1	8
Minusta tuntuu, että voin luottaa tähän lääkäriin	4	3	2	1	8
Voisin suositella tapaamaani lääkäriä ystävilleni tai sukulaisilleni	4	3	2	1	8
Vastaanoton hyödyllisyys					
Vastaanottokäynnistä oli minulle hyötyä	4	3	2	1	8
Sain vastaanottokäynniltä apua minua vaivanneeseen ongelmaan	4	3	2	1	8
Tämän vastaanottokäynnin jälkeen minusta tuntuu, että pystyn paremmin pärjäämään oireeni/sairauteni kanssa kuin ennen vastaanottoa	4	3	2	1	8

Muita arvioitanne / palautetta vastaanotosta:______________________________________

____

JATKUU SEURAAVALLA SIVULLA!

● Seuraavat kysymykset koskevat terveydentilaanne.
Rastittakaa sopivin vaihtoehto tai lisätkää vastaus annetulle viivalle.

Arvionne yleisestä terveydentilastanne: ☐ erinomainen ☐ hyvä ☐ tyydyttävä ☐ huono

Onko teillä jokin lääkärin toteama pitkäaikainen sairaus? Voitte valita useamman vaihtoehdon:

- ☐ ei pitkäaikaissairauksia
- ☐ astma tai keuhkoahtaumatauti
- ☐ diabetes
- ☐ masennus tai muu mielialahäiriö
- ☐ muistisairaus (Alzheimerin tauti tai muusta syystä johtuva dementia)
- ☐ sydänsairaus (esim. sepelvaltimotauti, eteisvärinä, sydämen vajaatoiminta)
- ☐ syöpäsairaus
- ☐ tuki- ja liikuntaelimistön sairaus (nivelrikko, nivelreuma tai jokin muu pitkäaikainen tuki- ja liikuntaelimistön sairaus)
- ☐ verenpainetauti
- ☐ jokin muu/ muita, mikä / mitkä?___________________________________

  ____

● Taustatiedot

Ikä _______________vuotta

Sukupuoli	☐ nainen	☐ mies	☐ muu
Äidinkieli	☐ suomi	☐ ruotsi	☐ muu, mikä____________?
Siviilisääty	☐ naimaton	☐ avioliitto tai rekisteröity parisuhde	
	☐ avoliitto	☐ eronnut	☐ leski
Korkein koulutus	☐ ei koulutusta tai perusasteen koulutus (kansakoulu, keskikoulu tai peruskoulu)		
	☐ toisen asteen koulutus (ammattikoulu tai ylioppilastutkinto)		
	☐ yliopisto- tai korkeakoulututkinto		
Työtilanne	☐ työssä	☐ opiskelija	☐ eläkkeellä
	☐ työtön	☐ muu, mikä?______________________	

KIITOS VASTAUKSISTANNE!

OLKAA HYVÄ JA PALAUTTAKAA TÄMÄ LOMAKE AULASSA OLEVAAN PALAUTUSLAATIKKOON.

Potilaan kokemuksia yleislääkärin vastaanoton laadusta suomalaisessa perusterveydenhuollossa: pärjäämisen tunne ja hoidon saatavuus.

OSIO C. Suostumus puhelinhaastatteluun

Pyydämme kohteliaasti, että voisimme ottaa Teihin puhelimitse yhteyttä kahden (2) viikon kuluttua. Puhelimessa tutkija kysyy Teiltä uudestaan **osan tämän kyselylomakkeen kysymyksistä**.

Puhelinhaastatteluun osallistuminen on **vapaaehtoista**. Teitä ei voida tunnistaa vastaustenne perusteella. Puhelinnumeroanne ei tallenneta. Vastauksianne käsitellään luottamuksellisesti. Voitte perua osallistumisenne milloin tahansa syytä ilmoittamatta.

☐ Minuun **saa ottaa yhteyttä puhelimitse**

Nimeni____

Puhelinnumeroni____________________________________

Olen parhaiten tavoitettavissa klo _________ välisenä aikana

KIITOS VAIVANNÄÖSTÄNNE!
OLKAA HYVÄ JA PALAUTTAKAA TÄMÄ LOMAKE AULASSA OLEVAAN PALAUTUSLAATIKKOON.

Osio D. Puhelinhaastattelu

Tutkimuskoodi:____________________

-Oletteko käynyt lääkärin vastaanotolla tuon 2 viikkoa sitten olleen käynnin jälkeen? ☐ Kyllä ☐ Ei
(kerran vai useita kertoja, missä?)_______________________________________

-vastaanoton ja soiton väli _____________päivää

-Olkaa hyvä ja arvioikaa 2 viikon takaista vastaanottokäyntiänne lääkärin vastaanotolla (vaihtoehdot paljon paremmin, paremmin, entiseen tapaan, huonommin, en osaa sanoa).

Tuon 2 viikon takaisen vastaanottokäynnin jälkeen kykenen	paljon paremmin	paremmin	entiseen tapaan	huonommin	en osaa sanoa
ymmärtämään sairauttani	2	1	0	-1	EOS
tulemaan toimeen sairauteni kanssa	2	1	0	-1	EOS
pitämään itseni terveenä	2	1	0	-1	EOS
selviytymään elämässäni	2	1	0	-1	EOS
tuntemaan terveydentilani	2	1	0	-1	EOS
auttamaan itseäni	2	1	0	-1	EOS

Seuraavat kysymykset koskevat arviotanne 2 viikon takaisesta vastaanottokäynnistä.
Vastatkaa seuraaviin väittämiin (vaihtoehdot täysin eri mieltä, osittain eri mieltä, en osaa sanoa, osittain samaa mieltä, täysin samaa mieltä).

	täysin samaa mieltä	osittain samaa mieltä	osittain eri mieltä	täysin eri mieltä	en osaa sanoa
Vastaanottokäynnistä oli minulle hyötyä.	4	3	2	1	8
Sain osallistua hoitoani koskevien päätösten tekoon	4	3	2	1	8
Sain riittävät jatkohoito-ohjeet.	4	3	2	1	8
Voisin suositella tapaamaani lääkäriä ystävilleni tai sukulaisilleni.	4	3	2	1	8
Tuon vastaanottokäynnin jälkeen minusta tuntuu, että pystyn paremmin pärjäämään oireeni/sairauteni kanssa kuin ennen vastaanottoa.	4	3	2	1	8

PUBLICATIONS

PUBLICATION
I

The validity and reliability of the Patient Enablement Instrument (PEI) after GP appointments in Finnish health care centres.

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Journal of Patient-Reported Outcomes

RESEARCH Open Access

The validity and reliability of the patient enablement instrument (PEI) after GP appointments in Finnish health care centres

Elina Tolvanen[1,2,3*], Tuomas H. Koskela[1], Mika Helminen[3,4] and Elise Kosunen[1,5]

Abstract

Background: The aim of this study was to assess the validity and reliability of the Patient Enablement Instrument (PEI) in Finnish health care centre patients. A pilot study was conducted to assess the content validity of the PEI. A questionnaire study in three health care centres in Western Finland was performed in order to assess acceptability, construct validity, internal consistency, and measurement error of the instrument. A telephone interview 2 weeks after the appointment was performed to evaluate reproducibility.

Results: The pilot study with 17 participants indicated good content validity of the PEI. In the questionnaire study, altogether 483 with a completed PEI score were included in the analyses. Factor analysis and item-scale correlations suggested high structural validity. The internal consistency of the instrument was high (Cronbach's $\alpha = 0.93$). The PEI score diminished strongly over the two-week period.

Conclusions: The PEI has good content validity and acceptability, good construct validity, high internal consistency but low reproducibility. Thus, the PEI seems to be an applicable tool to measure patient enablement in Finnish primary health care.

Keywords: Patient enablement instrument, Validity, Reliability, Finland

Background

The patient's experience of care is one of the essential elements when assessing health care quality. To explore this, many health-related patient-reported outcome (HR-PRO) measurements have been created, and new ones are constantly in development [1]. In Finland, the health care system is about to undergo a large reform, and one aspect of this will involve the client's wider freedom to choose where to obtain health and social services [2]. Under these circumstances, instruments to evaluate health care quality are needed. In addition, in order to evaluate the appropriateness of the available instruments, we need to assess their validity and reliability.

The concepts of validity and reliability are complex and have several definitions and interpretations that are often used interchangeably. The international COSMIN committee has developed a consensus for defining the psychometric properties of HR-PRO measurements [3]. We have used the COSMIN checklist for methodological studies [4] as a guideline when designing the study, as well as the recently published COSMIN Risk for Bias checklist when writing this paper [5].

Figure 1 presents the different domains of validity and reliability that have been adapted from the COSMIN guidelines [4]. According to the COSMIN criteria, the quality of an HR-PRO measurement can be divided into three domains: validity, reliability, and responsiveness

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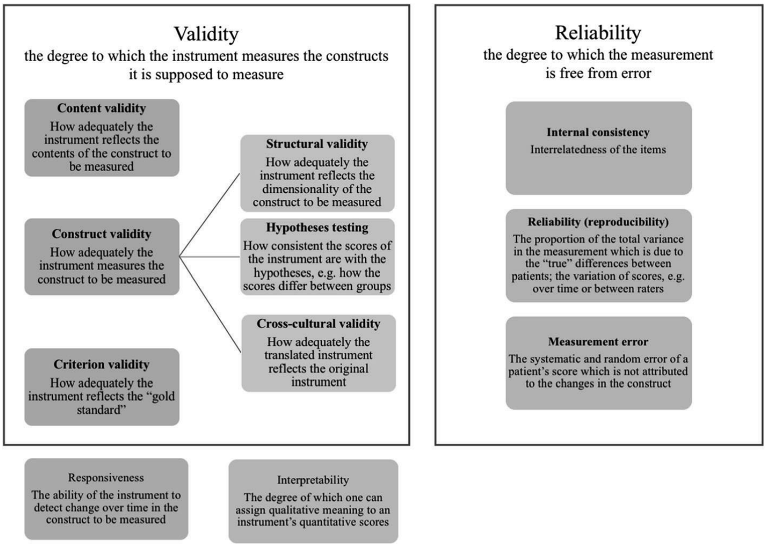

Fig. 1 The concept figure of validity and reliability, adapted from: L.B. Mokkink et al. The COSMIN checklist for assessing the methodological quality of studies on measurement properties of health status measurement instruments: An international Delphi study, Qual. Life Res. 19 (2010) 539–549

[3]. Validity is defined as the degree to which the instrument measures the constructs it is supposed to measure. Reliability refers to the degree to which the measurement is free from measurement error. Responsiveness is defined as the ability of the instrument to detect change over time in the construct to be measured [3]. Furthermore, two separate concepts exist: interpretability refers to the degree to which one can assign qualitative meaning to an instrument's quantitative scores [3], and acceptability addresses how acceptable the instrument is for the respondents to complete [1].

Patient enablement is defined as the patient's ability to understand and cope with illness and life after a consultation [6]. It is suggested to be a useful HR-PRO in primary health care [6–8]. The Patient Enablement instrument (PEI) is a six-item questionnaire addressed to the patient immediately after a consultation (Fig. 2). The items in the PEI questionnaire enquire the degree to which patients feel able to 1) understand their problem(s)/illness, 2) cope with the problem(s)/illness, 3) keep themselves healthy, 4) cope with life, 5) be confident about their health, and 6) help themselves after a consultation [6]. The PEI has been applied in several countries [6, 9–16].

Regarding factors associated with patient enablement, some studies have found that patient's older age is associated with higher enablement scores [9, 11, 16]. However, there are contradictory results [10, 13, 14, 17]. Having one [10, 18] or several chronic diseases [19], or lower self-perceived health status [11, 17, 19] have been associated with lower enablement in previous studies. PEI scores also seem to vary according to the patients' ethnic background [9, 10, 20, 21]. Furthermore, longer consultations, [6, 9, 12, 21–24], positive experiences of doctor–patient communication [10, 25, 26] and the doctor's empathy [19, 27] have been associated with higher enablement, as has higher patient satisfaction [25, 28]. On the other hand, the PEI seems to measure different outcome compared to patient satisfaction instruments [7, 16, 29, 30].

All items included in the PEI are designed to measure the same underlying concept, namely patient enablement. In earlier studies, the internal consistency of the instrument has been reported to be high [6, 7, 9, 13, 14, 16, 31, 32]. Studies regarding the reproducibility (or reliability over time) of the PEI have produced contradictory results, with either a minimal change over time [14, 33] or lower scores in the retest compared to the baseline [13, 15, 34]. However, there are only a few studies on the PEI in the Nordic countries [13, 35], and none that evaluate the psychometric properties of the PEI in the Finnish context.

The PEI was developed in the UK, where GP consultation times are short (5–8 min) [6, 9, 20, 27] and primary health care is maintained by independent GP practices. In Finland, the universal public health care system is organised by the municipalities, which provide services in multidisciplinary health care centres/stations. The appointments are usually fairly long, from 15 to 30

As a result of your visit to the doctor today, do you feel you are..	Much better	Better	Same	Less	Not applicable
able to understand your illness	☐	☐	☐	☐	☐
able to cope with your illness	☐	☐	☐	☐	☐
able to keep yourself healthy	☐	☐	☐	☐	☐
able to cope with life	☐	☐	☐	☐	☐
	Much more	More	Same	Less	Not applicable
confident about your health	☐	☐	☐	☐	☐
able to help yourself	☐	☐	☐	☐	☐

Scoring: Much better = 2, Better = 1, Same = 0, Less = -1, Not applicable = 0
Usually, the categories "Same" and Less" are combined and scored 0

Original PEI: Howie JG, Heaney DJ, Maxwell M. Measuring quality in general practice. Pilot study of a needs, process and outcome measure. Occas Pap R Coll Gen Pract. 1997;(75):i–xii, 1-32.

Fig. 2 Patient Enablement Instrument

min, and several issues are usually handled within the same appointment.

The aim of this study is to assess the validity and reliability of the PEI in Finnish health care centre patients, focusing on the acceptability, content and construct validity, internal consistency, and reliability of the instrument.

Methods

Study design

This study consisted of three parts: 1) a pilot study, 2) a questionnaire study with forms before (A) and immediately after (B) the appointment with a GP at a health care centre, and 3) telephone interviews 2 weeks after the appointment. The study design and the detailed information about the purpose of each part is presented in Fig. 3. In the pilot study, the goal was to recruit 10–20 participants. For an 80% chance of detecting a 0.5-point difference in the PEI score between the two groups, 350 and 90 participants were needed for the questionnaire study and telephone interviews, respectively. Two weeks has been considered a suitable interval for test-retest measurements when evaluating patient-reported outcomes [36]. Furthermore, telephone surveys seem to produce similar results as face-to-face surveys [37].

Questionnaire A (before the appointment) included questions about the patient's self-management, expectations about the consultation, reason for the appointment, and waiting times. Questionnaire B (after the appointment) included the PEI, other assessments of the appointment, and the patient's demographic information. The telephone interview included information about health service use in the interim period, the PEI, and comparison questions about patient satisfaction, benefit, involvement, and instruction evaluation. Because the patients should be "stable" between the two measurements (meaning that there had been no new interventions) [4], patients who had visited a doctor in primary or secondary care within the two-week interim period were excluded from the test-retest analyses.

Patient enablement instrument and item scoring

In 2014, the PEI questionnaire had been formally back-translated into Finnish as a part of a larger study [35]. Our research team, along with one professional translator (naive to both versions of the PEI), evaluated the translation and concluded that it was faithful.

The options in the PEI are "much better/more" (2 points), "better/more" (1 point), "same" (0 points), "less" (– 1 point), and "not applicable" (0 points), thus leading to a sum score ranging from – 6 to 12. Usually, the "same" and "less" options are combined [6, 12, 13], but we wanted to explore whether the negative option should be preserved in the questionnaire, as was done in one previous study [14]. The PEI score could be calculated when at least three of six questions had been answered [6]. Researchers are unanimous on which PEI scores reflect "adequate" or "good" enablement after consultation. For grouping purposes, researchers have used a cut-off point of one (PEI score 0 versus PEI score ≥ 1) [10] or six [6], or have compared PEI scores below and above the average on current study population [19].

The questions which were compared to the PEI indicated patient satisfaction, experienced benefit, patient involvement, and instruction evaluation. The comparison

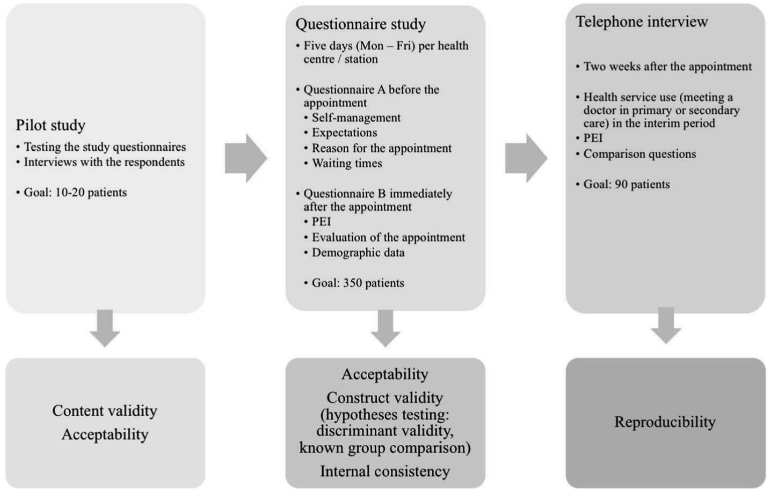

Fig. 3 The study design

questions are presented in the Table 1. The comparison questions were measured on a 4-point Likert scale.

Data collection

The study data were collected between February and May 2017. The study was conducted in three municipalities in the Pirkanmaa district in Western Finland: Hämeenkyrö, Pirkkala, and Tampere. Hämeenkyrö is a rather rural county with a sizable elderly population. Pirkkala is a semi-rural county with a relatively youthful population situated next to the large city of Tampere. Tampere is the third largest city in Finland, with 230, 000 inhabitants and a sizable population of young adults.

The pilot study was conducted at Pirkkala health care centre in February 2017. During 1 day, the researcher (ET) approached patients in the waiting room of the health centre and asked them to participate. The participants were requested to fill out the study questionnaires and to have a brief interview afterwards with the researcher. The participants had to evaluate e.g. the appropriateness and relevance of the questions.

During the data collection period, the goal was to recruit all patients who had an appointment with a GP at the health centre during a five-day period (Monday to Friday, during office hours). The researcher (ET) or research assistants tried to approach everyone who came to the waiting room of the health centre/station during office hours. All the participants were informed about the study both orally and in writing, and they gave written consent. If the participant had difficulties with filling in the questionnaire (e.g. due to deteriorated vision), the research assistants helped them. The exclusion criteria were age under 18 years, insufficient Finnish skills, and severity of illness preventing participation in the study. In addition, patients who had an appointment with a GP in maternity care or student care were excluded.

Assessing validity and reliability: data analysis

All the statistical analyses were performed with IBM SPSS version 25.

Content validity and acceptability

The content validity of the PEI in the Finnish context was evaluated during the pilot study. In the questionnaire study, all patients who had a valid PEI score after the appointment were included in the analysis.

Table 1 The comparison questions

	I fully agree	I partly agree	I partly disagree	I fully disagree	N/A[a]
I would recommend this doctor to a friend or a relative					
I benefited from my appointment with this doctor					
I was involved in the decisions made at the appointment					
I got adequate instructions to carry on with my care					

[a] N/A = not applicable

Completion rates, distributions, and the means of the PEI items were analysed in order to assess the acceptability of the instrument.

Construct validity

The unidimensionality of the instrument, indicating reliability and structural validity, was evaluated by principal component factor analysis with Varimax rotation. Factor analysis should produce one factor with an eigenvalue > 1, and each component should have similar factor loading. Furthermore, the structural validity was evaluated by item-scale correlations with the hypothesis that they should be higher than 0.7. Hypothesis testing was evaluated by comparing the PEI to questions measuring patient satisfaction, benefit, involvement, and instruction evaluation (indicating discriminant validity), plus known group comparison. The hypotheses were that the correlation between the PEI score and the comparison questions would be less than 0.4; and that the PEI scores would be lower among patients with a non-urgent reason for consultation, more chronic conditions, and a worse state of health; and the PEI is the same across gender and age groups. The Mann–Whitney *U* test and the Kruskal–Wallis test were used to compare distributions across groups.

Internal consistency

Internal consistency between the questionnaire items was evaluated by counting the Cronbach alphas with confidence intervals. A value > 0.7 is considered adequate [38].

Reliability (reproducibility)

Reliability over time was analysed by kappa statistics. The mean PEI and comparison question scores between the questionnaire study and telephone interview were compared by the Wilcoxon signed rank test.

Measurement error

The standard error of measurement (SEM) was calculated with the following formula: $SEM = SD\sqrt{1-r}$, where *SD* is the standard deviation of the test score and *r* is the reliability coefficient of the test, usually Cronbach's alpha, Cohen's Kappa, or some similar coefficient [39].

Results

Content validity: the pilot study

Altogether, 32 patients heading for a GP appointment were reached, 21 patients gave their consent, and 17 patients completed the pilot study. The mean age of the participants was 59.3 years (range 23–89) and 10 of them (58.8%) were female. In general, the patients accepted the study questionnaires well. The questionnaires were filled thoroughly and the majority of the respondents found the questions important and relevant. After the pilot study, only minor corrections were made to the questionnaires; the PEI part was not changed.

The questionnaire study

The data collection in three health centres took a total of 17 days. The patient recruitment process and division for the analyses is presented in Fig. 4. During the data collection period, we reached 940 patients heading for a GP appointment, which was 79.3% of all the patients (information derived from the ICT system in the health care centres). Of those, 546 eligible patients gave their consent to participate. Altogether 118 patients were excluded during the recruitment process, and 63 patients were excluded due to uncompleted questionnaire B or the PEI part.

The demographic factors of the participants are presented in Table 2. Of the 546 participants, 483 patients had a completed PEI score (fewer than three options missing) and were thus included in the analyses. The mean age of the participants was 58.5 years (range 18–97, SD 19.1) and 313 (64.8%) were female. Furthermore, 175 participants were included in the test-retest analyses. When comparing groups by participation in the telephone interview, the groups differed significantly (data not shown). For instance, the telephone interviewees were older and had more chronic illnesses.

Acceptability

The overall response rate was 64.4% (267 refused + 483 completed). The mean PEI score immediately after the appointment was 3.78 (range 0–12, SD 3.83). Altogether 131 of 483 (27.1%) had the floor (0 points) score and 37 (7.7%) the ceiling (12 points) score. There were only 16 respondents (3.3%) with missing items. In addition, it was not possible to compute the PEI score in 63 of 546 responses (these were excluded from the analyses). Of those, 42 respondents had left the whole of questionnaire B empty, leaving 21 PEI scores (3.8%) that were not calculable.

The distributions of the PEI answers immediately after the appointment are presented in Table 3. The option "less" was chosen 39 times out of 2898 answers (1.3%). In their original work to develop the PEI, Howie et al. decided to merge the "less" and "same" options, because only 1% of respondents chose the option "less" in any of the questions [6]. Thus, we adhered to this conclusion and combined the options "less" and "same". Furthermore, the option "not applicable" was chosen 86 times out of 2898 answers (3.0%). Altogether 23 answers (0.8%) were missing. In general, the acceptability of the PEI in the Finnish context can be considered good.

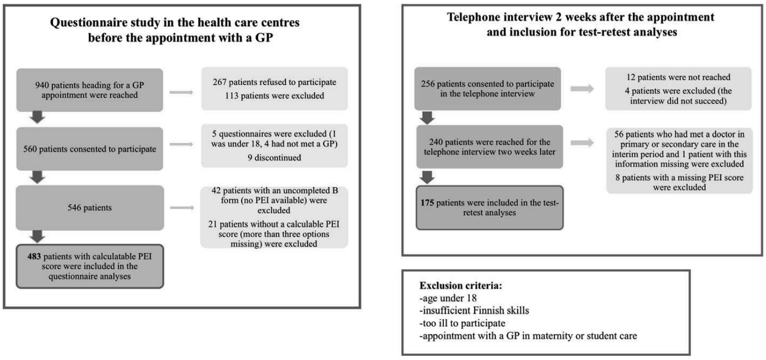

Fig. 4 Data collection process and division for the analyses

Construct validity: structural validity

The unidimensionality of the scale was evaluated by principal component factor analysis with Varimax rotation. The factor analysis produced one factor with an eigenvalue > 1, and it explained 73% of the variance at the baseline and 61% of the variance after the two-week interval. Each scale item had a similar factor loading (data not shown).

Spearman correlations for each item and the PEI score are presented in Table 4. All correlations were strong (Spearman's rho 0.79–0.84 at the baseline and 0.65–0.76 at the retest) and significant at the 0.01 level.

Construct validity: hypotheses testing

The correlations between the PEI items or total PEI score and the comparison questions are presented in Table 5. There were weak (Spearman's rho 0.15–0.33) correlations present.

The test hypotheses that patients with a worse state of health have lower PEI scores and that there is no difference between groups when considering age and sex were supported (data not shown). There were no differences in the distributions or means of the PEI score when comparing groups by the number of chronic illnesses or the consultation reason (neither acute vs long-term issue nor one vs more than one issue).

Internal consistency

Cronbach's alpha for the PEI items was 0.93 (95% CI 0.91–0.94, $p < 0.001$) at the baseline and 0.87 (95% CI 0.84–0.90, $p < 0.001$) at the retest, indicating good internal consistency. It was lower (0.906–0.914 at the baseline and 0.84–0.86 at the retest) when any of the six items were deleted, confirming the interrelatedness of the items.

Reliability (reproducibility)

When analysing the patients who had participated in the telephone interview and not met a doctor in primary or secondary care in the interim period ($n = 175$), the mean PEI score immediately after the appointment was 4.13 (range 0–12, SD 3.95). After the two-week interval, the mean PEI score was 2.78 (range 0–12, SD 3.0). The Wilcoxon signed rank test showed the difference of means to be statistically significant (Z = -5.29, p < 0.001). Kappa statistics showed only weak agreement (0.23–0.29) on all the questions.

Reliability (measurement error)

The standard error of measurement for the PEI score was: $SEM = 3.83\sqrt{1-0.93} = 3.83{*}0.26 = 0.996 \approx 1.0$ points, using the Cronbach's alpha coefficient immediately after the appointment. Calculated with the test-retest reliability coefficient (Cohen's Kappa mean 0.26), the SEM for the PEI in this study was $2.97{*}0.74 = 2.198 \approx 2.2$ points.

Discussion

This is the first study to assess the validity and reliability of the Patient Enablement Instrument (PEI) in the Finnish context. The PEI seems to have good acceptability and content validity, good construct validity (a highly unidimensional structure and relatively successful hypothesis testing), high internal consistency, and moderate to low reliability (a moderate standard error of measurement, but a low test-retest reliability) among Finnish health centre patients.

As was the case in this study, the PEI has been well accepted in different languages and countries [8, 11–14, 16]. In this study, the mean PEI score was relatively low (3.78), as in previous studies made in Finland [35], Sweden [13], and the UK (particularly those considering

Table 2 Distributions of the background factors, all participants and by participation in the telephone interview

	All participants, ***n*** = 483		Comparison by participation in the telephone interview			
			Patients who participated in the telephone interview and were included in the test-retest analyses, $n = 175$[a]		Patients who did not participate in the telephone interview, $n = 254$**	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
Age* **						
Range	18–97		**19–88**		**18–97**	
Mean (SD)	58.5 (19.1)		**62.2 (17.2)**		**56.2 (20.4)**	
Data missing/NA	17	3.5	7	4.0	9	3.5
Mean PEI score immediately after the appointment						
Mean (SD)	3.78 (3.83)		4.13 (3.95)		3.81 (3.86)	
Sex						
Female	313	64.8	108	61.7	173	68.1
Male	153	32.8	60	34.3	73	28.7
Other	1	0.2	0	0	1	0.4
Data missing/NA	16	3.3	7	4.0	7	2.8
Language						
Finnish	455	94.2	164	93.7	240	94.5
Other	5	1.1	2	1.1	2	0.8
Data missing/NA	23	4.8	9	5.1	12	4.7
Co-habitation						
Single, divorced, widowed	199	41.2	72	41.1	105	41.3
Married, registered partnership, or common-law marriage	267	55.3	96	54.9	140	55.2
Data missing/NA	17	3.5	7	4.0	9	3.5
Education* **						
No qualifications obtained or primary education (lower-level)	119	24.9	41	23.4	65	25.6
Upper secondary level of education (middle-level)	245	50.7	**80**	**45.7**	**141**	**55.5**
Post-secondary or higher (higher-level)	98	20.3	**47**	**26.9**	**37**	**14.6**
Data missing/NA	21	4.3	7	4.0	11	4.3
Working status* **						
Working	92	19.0	**21**	**12.0**	**61**	**24.0**
Retired	275	56.9	**112**	**64.0**	**135**	**53.1**
Other (unemployed, student, other)	99	20.5	**34**	**19.4**	**51**	**20.1**
Data missing/NA	17	3.5	8	4.6	7	2.8
State of health (self-assessment)						
Excellent	32	6.6	10	5.7	21	8.3
Good	165	34.2	66	37.5	85	33.5
Fair	171	35.4	60	34.3	85	33.5
Poor	18	3.7	6	3.4	7	2.8
Data missing/NA	97	20.1	33	18.8	56	22.0
Number of chronic illnesses* **						
No chronic illness	78	16.1	**22**	**12.6**	**48**	**18.9**
One	116	24.0	**38**	**21.7**	**69**	**27.2**
2–3	191	39.5	**80**	**45.7**	**87**	**34.3**
More than 3	61	12.6	**26**	**14.9**	**26**	**11.3**

Table 2 Distributions of the background factors, all participants and by participation in the telephone interview *(Continued)*

	All participants, ***n*** = 483		Comparison by participation in the telephone interview			
			Patients who participated in the telephone interview and were included in the test-retest analyses, *n* = 175[a]		Patients who did not participate in the telephone interview, *n* = 254**	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
Data missing/NA	37	7.7	9	5.1	24	9.4
Number of consultation reasons* **						
One	299	61.9	**98**	**56.0**	**170**	**66.9**
More than one	170	35.2	**71**	**40.6**	**77**	**30.3**
Data missing/NA	14	2.9	6	3.4	7	2.8
Consultation reason						
Acute	158	32.7	52	29.7	83	32.7
Non-acute	311	64.4	117	66.9	164	64.6
Data missing/NA	14	2.9	6	3.4	7	2.8
Location* **						
Semi-rural	147	30.4	**58**	**33.1**	**63**	**24.8**
Urban	196	40.6	**78**	**44.6**	**108**	**42.5**
Rural	140	29.0	**39**	**22.3**	**83**	**32.7**

[a] Patients who had not visited a doctor in the interim period and had both PEI scores available

**Patients with no telephone interview and immediate PEI score available

**Statistically significant difference between groups in the Chi-square test (bolded), missing values excluded from the analyses

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white, English-speaking patients) [6, 9, 10]. The low mean of the PEI score is often due to the relatively high proportion of patients reporting zero points [6, 10, 33]. In earlier studies, the proportion of patients reporting zero points ranges from 5% in Japan [16] to 55% in the Netherlands [33]. In our study, over a quarter (27.1%) of patients reported zero points in the PEI.

The construct validity testing confirmed the unidimensional structure of the instrument, as found earlier [6, 14]. The pre-study hypotheses were partly supported. The PEI had only a weak correlation to questions measuring e.g. patient-perceived benefit or satisfaction, suggesting that these are separate concepts. In addition, PEI scores did not differ across gender and age groups, as in one Swedish study [13]. Against the expectations, the PEI distributions and scores seemed to be very similar regardless the number of chronic illnesses or the reason for the consultation. Although this finding is contradictory to previous studies [17, 19], it might be interpreted that the PEI could be used in heterogenous patient populations.

In this study, the Cronbach's alpha for the PEI was high (0.93), as in earlier studies [6, 7, 9, 13, 14, 16, 31, 32]. For clinical measurements, alpha > 0.90 is regarded as desirable [40]. On the other hand, high values could reflect overlap or redundancy of the items [41]. Even the use of alpha in general has been questioned [42, 43]. However, the alpha coefficient is only one tool when

Table 3 The distributions of PEI answers, n = 483

As a result of your visit to the doctor today, do you feel you are	Much better/ much more, n (%)	Better / more, n (%)	Same or less, n (%)	Not applicable (N/A), n (%)	Missing, n (%)
Able to understand your illness	123 (25.5)	157 (32.5)	191 (39.5)	9 (1.9)	3 (0.6)
Able to cope with your illness	98 (20.3)	138 (28.6)	219 (45.3)	20 (4.1)	8 (1.7)
Able to keep yourself healthy	69 (14.3)	130 (26.9)	260 (53.8)	22 (4.6)	2 (0.4)
Able to cope with life	61 (12.6)	116 (24.0)	289 (59.8)	13 (2.7)	4 (0.8)
Confident about your health	83 (17.2)	141 (29.2)	247 (51.1)	10 (2.1)	2 (0.4)
Able to help yourself	68 (14.1)	138 (28.6)	261 (54.0)	12 (2.5)	4 (0.8)

Table 4 Spearman correlations between each item and the PEI score at the baseline and retest

Item	Correlation with total PEI score immediately, n = 483	Correlation with total PEI score 2 weeks after, n = 175
Understand illness	0.82	0.76
Cope with illness	0.84	0.73
Keep yourself healthy	0.82	0.65
Cope with life	0.79	0.67
Be confident about your health	0.83	0.76
Help yourself	0.82	0.76

All correlations were significant at the 0.01 level

assessing validity and reliability. In practice, it seems that a three-item version of the PEI [10] or a single question [44] are adequate for measuring patient enablement.

To our knowledge, there are no previous calculations of the standard error of measurement (SEM) for the PEI in the literature. The relatively large SEM is mostly caused by the large variation in scores. This could suggest the heterogeneity and diversity of the feelings of enablement. From one point of view, any increase in the patient's feelings of ability and coping should be considered a positive feature in itself. On the other hand, it has been suggested that if the patient is active, well-informed, and has good self-management prior to the consultation, even a high quality consultation could lead to "no change", meaning 0 points in the PEI measurement [45].

The test-retest reliability of the PEI is low, indicating that feelings of enablement seem to diminish after a rather short period of time. This was seen also in previous studies [13, 15, 34]. Nevertheless, it has been suggested that this is not due to the measurement itself, but to a true "dilution" of experience [13, 15]. Furthermore, the scores of the comparison questions also diminished statistically significantly over time (data not shown), a phenomenon found with other HR-PROs previously [34]. This confirms the idea that the overall experience is probably at its highest immediately after the consultation. It is therefore important to get the patient to start the planned intervention immediately after the consultation in order to benefit from the increased feelings of ability and coping.

Originally, Howie et al. developed the PEI as an outcome to study whether it is worth using more time in consultations, which are traditionally short in the UK, usually between 5 and 10 min [6, 46]. In this study, we did not collect information on consultation times, but in the Finnish primary health care system consultations are usually longer, around 15 to 20 min [46], and several issues are taken care of during the same consultation. However, in this study, the mean PEI scores and distributions were very similar to those from the UK [6, 9, 10]. This could indicate that up to a certain point, enablement can be increased by lengthening the consultation time, thus strengthening the patient's feelings of being listened to and taken care of. Nonetheless, it is possible that when the issues at the consultation multiply and become more complex, enablement is no longer dependent on the consultation duration, but on other features instead.

Strengths and limitations

Our goal was to reach the total sample of patients who visited a health care centre in 1 week, and we reached the majority of patients heading to GP appointments in

Table 5 Spearman correlations between PEI items or total PEI score and the comparison questions, n = 483

PEI item / Comparison question	I would recommend this doctor to a friend or a relative	I got benefit from my appointment with this doctor	I was involved in the decisions made at the appointment	I got adequate instructions to carry on with my care
Understand illness	0.27	0.28	0.24	0.28
Cope with illness	0.19	0.28	0.24	0.25
Keep yourself healthy	0.15	0.18	0.15	0.22
Cope with life	0.20	0.21	0.19	0.24
Keep confident about your health	0.18	0.27	0.21	0.24
Help yourself	0.26	0.24	0.22	0.24
PEI score immediately	0.32	0.33	0.28	0.33

All correlations were significant at the 0.01 level the data collection period. Furthermore, the response rate was high. We managed to collect a larger dataset than originally planned, and the statistical power calculation demands were met. The study population matches fairly well the average users of Finnish health care centres, with a slight overrepresentation of female and elderly patients [47]. Regrettably, we could not compare the characteristics of participants and non-participants, and a selection bias is therefore possible. The health care centres were not chosen randomly, but they were located both urban and rural areas with different population structures.

Assessments of the cross-cultural validity, criterion validity, and responsiveness of the PEI were not included in the design of this study. Criterion validity could not be assessed because the PEI itself can be considered the "gold standard" of measuring enablement and there are currently no validated questionnaires on patient enablement in Finnish. In addition, with a cross-sectional study design, the elements of responsiveness could not be evaluated.

Formal research on the validity of the comparison questions has not been made in the Finnish context. Nevertheless, the questions have been used in earlier studies [48, 49]. Indeed, there are very few HR-PRO measurements available that have undergone a strict assessment of their validity and reliability in the Finnish context. With this study, we could assess several aspects of the complex concept of validity and reliability, and this can be considered a major strength.

Conclusions

The PEI seems to have good psychometric properties among Finnish health centre patients. The results are rather similar to previous studies, even though the Finnish primary care setting is different with e.g. longer consultation times. The strongest features of the PEI are its high internal consistency and structural validity. The low reproducibility of the instrument probably reflects the tendency of feelings of enablement to decrease over time. The elements of responsiveness of the PEI need further evaluation, as do its clinical implications.

Overall, the PEI seems to be an applicable tool for measuring patient enablement – which is considered one aspect of quality – in Finnish health care centres when used immediately after the GP appointment. When assessing quality through the patient's experience, the PEI could be used e.g. along with patient satisfaction measurements to gain a broader understanding. The PEI is generic and could therefore be suitable for GP patients with heterogenous consultation health issues. To achieve feelings of ability and coping would be important to all patients and thus patient enablement should be promoted in GP appointments.

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Authors' contributions
ET, EK, and TK designed the study. ET was a major contributor in drafting the manuscript and performed the statistical analyses. EK, TK, and MH contributed to the interpretation of the data analysis. They also critically revised the manuscript for important intellectual content. The authors have read and approved the final manuscript.

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Availability of data and materials
The datasets used and analysed during the current study are available from the corresponding author upon reasonable request. After the Patient Enablement in Pirkanmaa study has been completed, the data will be stored to Finnish Social Science Data Archive (FSD).

Ethics approval and consent to participate
The study design was approved in December 2016 by the Ethics Committee of the Tampere region.

Consent for publication
Not applicable.

Competing interests
None.

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Comparison of the Patient Enablement Instrument (PEI) with two single-item measures among Finnish Health care centre patients

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Abstract

Background: The Patient Enablement Instrument (PEI) is an established patient-reported outcome measure (PROM) that reflects the quality of appointments with general practitioners (GPs). It is a six-item questionnaire administered to the patient immediately after a consultation. The aim of this study was to evaluate whether a single-item measure could replace the PEI when measuring patient enablement among Finnish health care centre patients.

Methods: Two single-item measures, Q1 and Q2, were chosen for comparison with the PEI. Firstly, a pilot study with questionnaire testing and brief interviews with the respondents were performed in order to assess the content validity of the PEI and the single-item measures. Secondly, a questionnaire study after a single appointment with a GP was carried out in three health care centres in Western Finland in order to evaluate the construct and criterion validity of the single-item measures. A telephone interview was performed 2 weeks after the appointment in order to assess the test-retest reliability of the single-item measures. The sensitivity, specificity, and both positive and negative predictive values of Q1 and Q2 were calculated with different PEI score cut-off points.

Results: Altogether 483 patients with a completed PEI were included in the questionnaire study analyses. Altogether 149 and 175 patients had completed Q1 and Q2, respectively, both in the questionnaire and the telephone interview. The correlations between the PEI and Q1 and Q2 were 0.48 and 0.84, respectively. Both the single-item measures had a high sensitivity and a negative predictive value in relation to patients with lower PEI scores. The reliability coefficients were 0.24 for Q1 and 0.76 for Q2. The test-retest values of Q1, Q2, and the PEI were low.

Conclusions: Q2 seems to be a valid and reliable measure of patient enablement. Q1 seems to be less correlated with the PEI, but it also has a high negative predictive value in relation to low enablement scores.

Keywords: Patient enablement instrument, Single-item measures, Validity, Reliability, Finland

Background

The patient's perception of care is a key element when assessing quality of care. Several patient-reported outcome measures (PROMs) have been produced to measure the patient's perception of care, and more are being developed [1]. PROMs can be disease-specific – evaluating the symptoms and impacts of a specific condition – or generic – tailored to consider general aspects, such as quality of life or severity of pain [2]. Until recently, the use of PROMs was seldom systematic and depended mostly on the interests of individual organisations or doctors [2]. This has also been the case in Finland, where the health care system is about to undergo a major reform [3]. Under these circumstances, new instruments to evaluate different aspects of health care quality are needed.

The form of a PROM can be anything from a single-item measure to a complicated questionnaire [2]. Traditionally, single-item measures are used to measure

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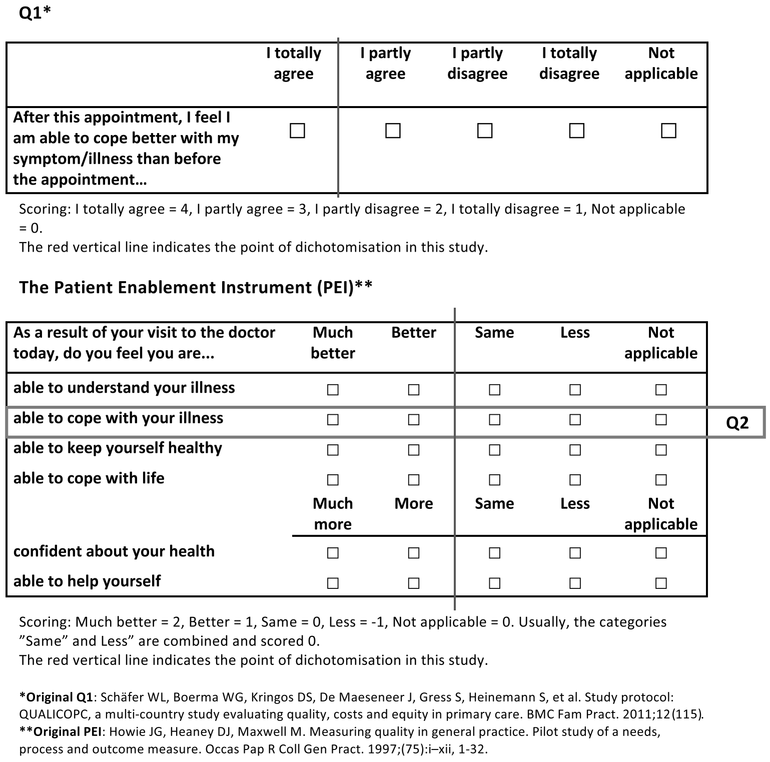
global concepts, e.g. pain [4], working ability [5], or quality of life [6, 7]. The advantage for single-item measurements is that they are effortless and quick to answer. Furthermore, they require little space on a survey form. It is suggested that single-item measures are appropriate if the concept to be measured is sufficiently specific and unidimensional rather than multidimensional [4, 8].

Patient enablement is a concept used to reflect one aspect of health care quality. It is defined as the patient's ability to understand and cope with illness and life following a consultation with a general practitioner (GP) [9]. This is measured with the Patient Enablement Instrument (PEI), a six-item questionnaire addressed to the patient immediately after the consultation (see Fig. 1). The PEI is suggested to be a good generic PROM [9–11]. Indeed, it is considered "the gold standard" for measuring enablement. This questionnaire has been implemented in several countries, at least in Canada, China (Hong Kong), Croatia, Japan, Poland, United Kingdom and Sweden [9, 12–19].

Based on previous studies, it is clear that several factors are associated with patient enablement. Higher enablement is associated with factors such as longer consultation duration [9, 20], higher patient satisfaction [20, 21], positive experiences of doctor–patient communication [13, 21, 22], and perceptions of the doctor's empathy [23, 24]. Furthermore, the patient's poorer state of health [25] and multi-morbidity [13, 23] have been associated with lower enablement. In general, PEI scores seem to vary according to the patients' ethnic background [12, 13, 26, 27] and between countries [14, 17–19, 28, 29].

Patient enablement could be a potential concept to be measured with a single-item measure. Single-item measures are suggested to be suitable for unidimensional, global concepts [4]. All the PEI's items are designed to measure one underlying concept, namely patient enablement. Its internal consistency has been shown to be high in previous studies [9, 10, 12, 16, 19], reflecting unidimensionality. To our knowledge, the PEI has not been directly compared to any single-item measure in previous studies.

The aim of this study was to explore whether a single-item measure could replace the PEI in measuring patient enablement among patients at Finnish health care centres. We chose two single-item measures for this comparison. The detailed research objectives were:



Q1*

	I totally agree	I partly agree	I partly disagree	I totally disagree	Not applicable
After this appointment, I feel I am able to cope better with my symptom/illness than before the appointment…	☐	☐	☐	☐	☐

Scoring: I totally agree = 4, I partly agree = 3, I partly disagree = 2, I totally disagree = 1, Not applicable = 0.
The red vertical line indicates the point of dichotomisation in this study.

The Patient Enablement Instrument (PEI)**

As a result of your visit to the doctor today, do you feel you are…	Much better	Better	Same	Less	Not applicable	
able to understand your illness	☐	☐	☐	☐	☐	
able to cope with your illness	☐	☐	☐	☐	☐	Q2
able to keep yourself healthy	☐	☐	☐	☐	☐	
able to cope with life	☐	☐	☐	☐	☐	
	Much more	More	Same	Less	Not applicable	
confident about your health	☐	☐	☐	☐	☐	
able to help yourself	☐	☐	☐	☐	☐	

Scoring: Much better = 2, Better = 1, Same = 0, Less = -1, Not applicable = 0. Usually, the categories "Same" and Less" are combined and scored 0.
The red vertical line indicates the point of dichotomisation in this study.

***Original Q1**: Schäfer WL, Boerma WG, Kringos DS, De Maeseneer J, Gress S, Heinemann S, et al. Study protocol: QUALICOPC, a multi-country study evaluating quality, costs and equity in primary care. BMC Fam Pract. 2011;12(115).
****Original PEI**: Howie JG, Heaney DJ, Maxwell M. Measuring quality in general practice. Pilot study of a needs, process and outcome measure. Occas Pap R Coll Gen Pract. 1997;(75):i–xii, 1-32.

Fig. 1 Q1 and the Patient Enablement Instrument (PEI) including Q2

1) To determine whether there are correlations between the single-item measures and the PEI (indicating criterion validity);
2) To ascertain what would be the most relevant cut-off point for the PEI score in relation to the single-item measures;
3) To explore the psychometric properties of the single-item measures, focusing on content and construct validity and reliability.

Methods

The PEI, the single-item measures Q1 and Q2, and the comparison questions

The PEI

The PEI and the single-item measures Q1 and Q2 used in this study are presented in Fig. 1. The PEI questionnaire includes six questions that inquire about the patient's perceptions of his/her ability to 1) understand his/her problem(s)/illness(s), 2) cope with his/her problem(s)/illness(s), 3) keep him/herself healthy, 4) cope with life, 5) be confident about his/her health, and 6) help him/herself [9].

The scale in the PEI is "much better/more" (2 points), "better/more" (1 point), "same or less" (0 point), and "not applicable" (0 points), leading to a sum score ranging from 0 to 12. This PEI score can be calculated when at least three of the six questions have been answered [9]. There is no clear consensus on what PEI score is considered "good" or "adequate". PEI score cut-offs of zero [13] or six points [9] have been used, as well as the mean score of the study population at the time [23]. A PEI score of more than six points is suggested to reflect "high" enablement [9].

The PEI questionnaire was formally back-translated into Finnish in 2014 as a part of a larger study [28]. The translation was evaluated by our research team and by a professional translator naive to both versions of the PEI. The translation was concluded to be faithful to the original.

In this study, the PEI was compared to two single-item measures with an almost similar wording but different scales (see Fig. 1):

1) Q1: "After this appointment, I feel I am able to cope better with my symptom/illness than before the appointment." Possible answers: "I totally agree / I partly agree / I partly disagree / I totally disagree"
2) Q2: "As a result of your visit to the doctor today, do you feel you are able to cope with your illness …" Possible answers: "much better / better / same or less".

Q1

Q1 was included as one of the quality measurements in the Patient Experience questionnaire in the Quality and Costs of Primary Care in Europe (QUALICOPC) study. This question was formed using the PEI questionnaire [30]. Previously, this question has been used to explore factors associated with enablement and coping in Finland [21] and Switzerland [31].

The wording and scoring of Q1 were slightly changed from the original Finnish QUALICOPC questionnaire. Firstly, we changed "health problem/illness" to "symptom/illness". Secondly, we used a different synonym in Finnish for "coping" in order to achieve better relevance to the Finnish context. In the QUALICOPC study, Q1 had a three-item scale: "no" / "yes" / "don't know". We wanted to evaluate whether a four-point Likert-scale would be more relevant, so the items were: "I totally disagree" (1), "I partly disagree" (2), "I partly agree" (3), "I totally agree" (4), and "not applicable".

Q2

Q2 is already part of the PEI questionnaire. The developers of the PEI suggest that this question is one of the three PEI items that have the greatest face validity and are less vulnerable to confounding [13]. In addition, data from previous studies confirm that the three- and six-item measures have a high level of correlation and high internal consistency [11]. Intentionally, the purpose of this study was to explore Q1, but during the research process, it became evident that Q2 had potential properties. Consequently, Q2 was chosen for inclusion in this study. Neither the wording nor the scoring of Q2 was changed.

The comparison questions

Some comparison questions were included in the questionnaire in order to assess the construct validity of Q1 and Q2. The comparison questions were "I would recommend this doctor to a friend or a relative", indicating patient satisfaction; "I benefited from this appointment", indicating experienced benefit; "I was involved in the decisions made in the appointment", indicating patient involvement; and "I got adequate instructions to carry on with my care", indicating instruction evaluation. As with Q1, the same four-point Likert scale was used.

Study design

The study consisted of three parts:

1) A pilot study that included interviews with patients who filled in the study questionnaires. The purpose of the pilot study was to assess the content validity of PEI (including Q2) and Q1.
2) A questionnaire study with questionnaires (A) before and (B) after the appointment with a GP. Questionnaire A included questions, e.g. about the patient's self-management and expectations about the consultation, and questionnaire B included the

PEI, other assessments of the appointment, and the patient's demographic information. The purpose of the questionnaire study was to collect quantitative data in order to assess the construct validity, criterion validity, and reliability of Q1 and Q2.

3) A telephone interview was conducted 2 weeks after the appointment to collate information on health service use in the interim period, the PEI, Q1, and comparison questions about patient satisfaction, benefit, involvement, and instruction evaluation. The purpose of the telephone interview was to assess the test-retest reliability of Q1 and Q2.

Data collection

The study data were collected between February and May 2017. The study was conducted in three municipalities in the Pirkanmaa district in Western Finland: Hämeenkyrö, Pirkkala, and Tampere. The pilot study was performed on a single day when the researcher (ET) recruited patients in the health care centre to fill in the study questionnaires and to participate in a brief interview afterwards. During the data collection period for the actual questionnaire study, the goal was to recruit all patients who had an appointment with a GP at the health centre over a five-day period (Monday to Friday during office hours). The researcher (ET) or research assistants tried to approach everyone who came to the waiting room of the health centre/station during office hours. The exclusion criteria were an age under 18 years, insufficient Finnish skills, and a severity of illness preventing participation in the study. In addition, patients who had an appointment with a GP for maternity or student care were excluded.

All the participants were informed about the study both orally and in writing, and they gave written consent. Paper questionnaires were administered to the participants. Participants who had difficulties with filling in the questionnaire (e.g. due to deteriorated vision) were assisted by the research assistants. All the participants were offered the opportunity to participate in the telephone interview 2 weeks after the appointment. Of the telephone interviewees, those who had had an appointment with a doctor in primary or secondary care in the interim period were excluded from the analyses. This was due to the assumption that potential new interventions in the interim period could affect the later assessments.

Statistical analyses

All the statistical analyses were performed with IBM SPSS version 25. Descriptive data were used to observe the item variation and discriminative properties of Q1 and Q2. In order to find the most relevant cut-off point for the PEI, cross-tabulations between the PEI and Q1 and Q2 were performed with different PEI cut-offs, and the sensitivity, specificity, and predictive values for Q1 and Q2 were calculated. In terms of construct validity, Spearman correlations between Q1, Q2, the PEI, and the comparison questions were calculated. In terms of reliability, reliability coefficient *r*, mean scores, and Cohen Kappa values for Q1 and Q2 were calculated.

Results

Data collection

In the pilot study, 17 of the 32 patients reached were recruited. The mean age of the participants was 59.3 years (range 23–89) and 10 of them (58.8%) were female. In general, the patients accepted the study questionnaires well. The majority of the respondents found the questions important and relevant, and they had no problems when filling out the questionnaires, reflecting the good content validity of both the PEI and Q1.

In the data collection period (17 days), we recruited 546 patients to participate in the study. Of those, 483 had a completed PEI score and were thus included in the analyses. The demographic information of the study sample is presented in Table 1 (see Table 1 attached after the main manuscript). The mean age of the participants was 58.5 years (range 18–97, SD 19.1), and 313 (64.8%) were female. Furthermore, 175 patients who participated in the telephone interview had a completed PEI score and had made no visits to any doctor in the interim period, and thus they were included in the test-retest analyses. Compared to those who did not participate, those who participated in the telephone interview were older, more often retired, had more chronic illnesses, and were more likely to have a higher-level education and to live in a semi-rural location.

Item distributions of the PEI, Q1, and Q2

The mean PEI score immediately after the appointment was 3.78 (range 0–12, SD 3.83). Altogether 131 of 483 (27.1%) had the floor (0 points) score and 37 (7.7%) the ceiling (12 points) score. There were 16 respondents (3.3%) with at least one item missing.

When considering Q1, 237 patients (49.1%) chose the item "I totally agree" and 149 (30.8%) the item "I partly agree". The proportions of both disagree options for Q1 were very low (altogether 8.2%), suggesting low discriminative properties. There were 17 (3.5%) missing responses. For the analysis, we decided to dichotomise the answers using "I totally agree" versus "not totally agree" (i.e. the other three options). In addition, while the "not applicable" (NA) values are counted as 0 in the PEI, we combined the NA values (40; 8.3%) with the "not totally agree" group.

Table 1 The demographic information of the study sample

	All participants, $n = 483$		Comparison by participation in the telephone interview (test-retest analyses)			
			Patients included in the test-retest analyses, $n = 175$[a]		Patients who did not participate in the telephone interview, $n = 254$	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
Age[b]						
Range	18–97		**19–88**		**18–97**	
Mean (SD)	58.5 (19.1)		**62.2 (17.2)**		**56.2 (20.4)**	
Data missing/NA	17	3.5	7	4.0	9	3.5
Mean PEI score immediately after the appointment						
Mean (SD)	3.78 (3.83)		4.13 (3.95)		3.81 (3.86)	
Sex						
Female	313	64.8	108	61.7	173	68.1
Male	153	32.8	60	34.3	73	28.7
Other	1	0.2	0	0	1	0.4
Data missing/NA	16	3.3	7	4.0	7	2.8
Language						
Finnish	455	94.2	164	93.7	240	94.5
Other	5	1.1	2	1.1	2	0.8
Data missing/NA	23	4.8	9	5.1	12	4.7
Co-habitation						
Single, divorced, widowed	199	41.2	72	41.1	105	41.3
Married, registered partnership, or common-law marriage	267	55.3	96	54.9	140	55.2
Data missing/NA	17	3.5	7	4.0	9	3.5
Education[b]						
No qualifications obtained or primary education (lower-level)	119	24.9	41	23.4	65	25.6
Upper secondary-level education (middle-level)	245	50.7	**80**	**45.7**	**141**	**55.5**
Post-secondary or higher (higher-level)	98	20.3	**47**	**26.9**	**37**	**14.6**
Data missing/NA	21	4.3	7	4.0	11	4.3
Working status[b]						
Working	92	19.0	**21**	**12.0**	**61**	**24.0**
Retired	275	56.9	**112**	**64.0**	**135**	**53.1**
Other (unemployed, student, other)	99	20.5	**34**	**19.4**	**51**	**20.1**
Data missing/NA	17	3.5	8	4.6	7	2.8
State of health (self-assessment)						
Excellent	32	6.6	10	5.7	21	8.3
Good	165	34.2	66	37.5	85	33.5
Fair	171	35.4	60	34.3	85	33.5
Poor	18	3.7	6	3.4	7	2.8
Data missing/NA	97	20.1	33	18.8	56	22.0
Number of chronic illnesses[b]						
No chronic illness	78	16.1	**22**	**12.6**	**48**	**18.9**
1	116	24.0	**38**	**21.7**	**69**	**27.2**
2–3	191	39.5	**80**	**45.7**	**87**	**34.3**
> 3	61	12.6	**26**	**14.9**	**26**	**11.3**

Table 1 The demographic information of the study sample *(Continued)*

	All participants, $n = 483$		Comparison by participation in the telephone interview (test-retest analyses)			
			Patients included in the test-retest analyses, $n = 175$[a]		Patients who did not participate in the telephone interview, $n = 254$	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
Data missing/NA	37	7.7	9	5.1	24	9.4
Number of reasons for the consultation [b]						
1	299	61.9	**98**	**56.0**	**170**	**66.9**
> 1	170	35.2	**71**	**40.6**	**77**	**30.3**
Data missing/NA	14	2.9	6	3.4	7	2.8
Reason for the consultation						
Acute	158	32.7	52	29.7	83	32.7
Non-acute	311	64.4	117	66.9	164	64.6
Data missing/NA	14	2.9	6	3.4	7	2.8
Location[b]						
Semi-rural	147	30.4	**58**	**33.1**	**63**	**24.8**
Urban	196	40.6	**78**	**44.6**	**108**	**42.5**
Rural	140	29.0	**39**	**22.3**	**83**	**32.7**

[b] Patients who had not visited a doctor in the interim period and had completed the PEI at the baseline and retest; 26 of these had not completed Q1
[b] Statistically significant difference between groups in the Chi-square test (bolded), missing values excluded from the analyses

With Q2, 98 of 483 patients (20.3%) answered "much better", 138 (28.6%) answered "better", and 239 (49.5%) answered "same or less". Altogether, eight (1.7%) responses were missing. To achieve higher comparability between Q1 and Q2, Q2 was dichotomised as "better or much better" versus "same or less".

The sensitivity, specificity, and predictive values of Q1 and Q2 with different PEI score cut-offs

The PEI score cut-offs of zero, three (3.78 being the mean of the study), and six points were used in order to find the most relevant cut-off points in relation to Q1 and Q2. For the different cut-off points, the sensitivity, specificity, and positive and negative predictive values are presented in Table 2. Both Q1 and Q2 had high negative predictive values (95.6 and 98.1%, respectively) with a PEI cut-off score of six points.

Correlations between Q1, Q2, other PEI items, the PEI score, and comparison questions

Spearman correlations between Q1, Q2, other PEI items, the PEI score, and the comparison questions are presented in Table 3. The correlation between Q1 and the PEI items varied from 0.38 ("Keep myself healthy") to 0.49 ("Cope with illness"). The correlation between Q2 and the other PEI items varied from 0.57 ("Keep confident about my health") to 0.70 ("Understand illness"). The correlations between Q1 and the PEI score and between Q2 and the PEI score were 0.48 and 0.84, respectively. The correlations between the comparison

Table 2 The sensitivity, specificity, and positive and negative predictive values of Q1 and Q2 using different PEI cut-off scores, $n = 466$

PEI cut-off score	Sensitivity (%)		Specificity (%)		Positive predictive value (PPV), (%)		Negative predictive value (NPV), (%)	
	Q1	Q2	Q1	Q2	Q1	Q2	Q1	Q2
Zero points (0 vs 1–12)	86.6	64.8	75.4	100.0	86.9	54.4	41.4	100.0
Three points (0–3 vs 4–12)	69.7	92.0	66.9	81.4	70.0	78.4	68.6	93.3
Six points (0–6 vs 7–12)	90.0	98.1	60.0	63.9	38.4	43.2	95.6	98.1

Sensitivity = the proportion of "true positive" patients, i.e. patients who answered positively to Q1 or Q2 among those who had higher PEI scores
Specificity = the proportion of "true negative" patients, i.e. patients who answered negatively to Q1 or Q2 among those who had lower PEI scores
Positive predictive value = the proportion of patients who actually had a higher PEI score among those who answered positively to Q1 or Q2
Negative predictive value = the proportion of patients who actually had a lower PEI score among those who answered negatively to Q1 or Q2

Table 3 Spearman correlations between Q1, Q2, other PEI items, the PEI score, and the comparison questions; the construct validity of Q1, $n = 483$

PEI item	Q1[a]	Q2[b]
Understand illness	0.40	0.70
Q2: Cope with illness	0.49	1.00
Keep yourself healthy	0.38	0.67
Cope with life	0.43	0.62
Keep confident about your health	0.40	0.57
Help yourself	0.44	0.63
PEI score immediately	0.50	0.84
Comparison question		
I would recommend this doctor to a friend or a relative	0.31	0.20
I benefited from my appointment with this doctor	0.47	0.29
I was involved in the decisions made at the appointment	0.33	0.22
I got adequate instructions to carry on with my care	0.40	0.25

All correlations are statistically significant at the 0.05 level
Note: all variables are non-dichotomised
[a] Q1: "After this appointment, I feel I am able to cope better with my symptom/illness than before the appointment." Answer options: "I totally agree / I partly agree / I partly disagree / I totally disagree"
[b] Q2: "As a result of your visit to the doctor today, do you feel you are able to cope with illness …" Answer options: "much better / better / same or less"

questions were higher with Q1 (0.31–0.47) than they were with Q2 (0.20–0.29).

The reliability of Q1 and Q2

The reliability of the single-item measures was calculated with the formula $r(xy) = \sqrt{r(xx) * r(yy)}$ [8]. In this formula, *r (xy)* is the correlation between variables, *r (xx)* is the reliability of variable x (in this case, the single-item measure Q1 or Q2) and *r (yy)* is the reliability of variable y (in this case, the scale measure PEI). The correlations between Q1 and the PEI and Q2 and the PEI were 0.50 and 0.84, respectively. For the PEI, the Cronbach's alpha reliability coefficient was 0.93. Using the formula, the reliability was 0.27 for Q1 and 0.76 for Q2.

At the baseline and 2 weeks after the appointment, 149 patients had completed Q1 and 175 patients had completed Q2. In order to evaluate the test-retest reliability of Q1, it was treated as a numeric variable and the means at the baseline and retest were calculated. The mean for Q1 was 3.49 (SD 0.85) at the baseline and 3.03 (SD 0.72) at the retest. The difference between means was statistically significant in the Wilcoxon signed rank test ($Z = -5.52$, $p < 0.001$). In addition, when treated as categorical variables, the Kappa values measuring total agreement between the baseline and the retest were only 0.21 for Q1 and 0.29 for Q2, confirming the low test-retest reliability of both. The pattern was similar with the PEI score, all other PEI items, and the comparison questions.

Discussion

This study shows that it is possible to measure patient enablement with a single-item measure. Q2, which is included in the PEI questionnaire, has a strong correlation with the PEI score, a high reliability, and a high sensitivity/negative predictive value with the PEI cut-off scores of three and six. Q1, which is very similar to Q2 but has a different scale, has a high sensitivity and a negative predictive value with a PEI cut-off score of six. However, the correlation with the PEI score and the reliability of Q1 are significantly lower than with Q2. Both Q1 and Q2 seem to measure different concepts, like patient satisfaction or decision involvement. These single-item measures, like the PEI itself, have a low test-retest reliability.

The most notable difference between Q1 and Q2 is the measuring scale; otherwise, they are almost identical. The wording of these measures is very similar. Both questions are transitional, measuring the change in the patient's perception as a result of the consultation. The different scale is the most probable reason for the modest correlation between Q1 and Q2 and the whole PEI. It seems possible that the four-point Likert scale used in Q1 is too insensitive to detect the change in the patient's perceptions of coping.

Both Q1 and Q2 seem to identify well the patients with lower enablement scores. Q2 has a high negative predictive value (98.1%) in relation to the PEI with a cut-off of six points, meaning that patients who answered negatively to Q2 had a 98.1% likelihood of having a PEI score of 0–6 points. Q1 has almost as high a negative predictive value, at 95.6%, with the cut-off of six points. When bearing in mind the clinical relevance of this result, we consider simply finding patients with low enablement to be crucial. Such patients might benefit from different interventions or a different health service focus.

Previous studies support the reliability of single-item measures, although their reliability is sometimes questioned [4, 8]. Usually, reliability values > 0.7 are considered adequate [32]. In this study, the reliability of Q2 in relation to the PEI was high, at 0.76, and the reliability of the Q1 was significantly lower, at 0.24. The calculation formula of the reliability coefficient *r* of both measures differs only by the correlation between them and the PEI. Consequently, the notable difference in reliability is caused by the different correlations between Q1 or Q2 and the PEI.

The generally moderate correlations between Q1 and Q2 and the comparison questions suggest the good construct validity of these single-item measures. The comparison questions were more highly correlated with Q1 than with Q2. Both Q1 and Q2 had the highest – albeit moderate – correlations with patient-perceived benefit (0.49 and 0.34, respectively) and instruction evaluation (0.45 and 0.34, respectively). The difference between the correlations may be caused by the different measuring scale. Altogether, the single-item measures seem to measure different concepts from the comparison questions.

The test-retest reliability values of Q1, Q2, and the PEI are low. This indicates that perceptions of enablement seem to diminish after a rather short period of time. This phenomenon was seen also in previous studies [16, 18, 33], as well as with other PROMs [33]. Nevertheless, it is suggested this is not due to the measurement itself, but to a true "dilution" of experience [16, 18]. In addition, the transitional scale could affect the evaluation over time [34, 35]. It could be difficult for the patient to evaluate "whether there had been a change in my perceptions due to an appointment two weeks ago".

Strengths and limitations

The theoretical frame supports the idea of using a single-item measure when measuring patient enablement. The concept of enablement is unidimensional [9, 10, 12, 16, 19] and hence suitable for single-item measures. Such single-item measures could save space in questionnaire forms, thus saving time and money for researchers and clinicians. It is also more convenient for the respondent to answer one question instead of six. One limitation of choosing single-item measurement in this study is that Q2 is actually part of the PEI questionnaire. However, we regard that excluding Q2 from the PEI would not reflect the complete measurement and thus be inaccurate. In an comparable situation, the authors came into the similar conclusion when studying different work ability measurements [5].

In this study, all but one respondent in the pilot study found the PEI questions relevant and had no difficulties when filling out the questionnaire form. Nevertheless, the pilot study interviews were made mostly using open questions and the "thinking aloud" technique. The use of more specific and structured questions, as was done in a recent PEI study [34], might have been more appropriate. With this procedure, the non-discriminative scale of Q1 might have been detected earlier. Furthermore, it has been suggested that the PEI could be more vulnerable to hypothesis guessing, and it might lack face validity for some patients [34].

The study sample was altogether satisfactory. It was intended to be the total sample of patients who visited the health care centres during 1 week. During the data collection period, we reached 79.3% of all the patients heading for GP appointments (information derived from the ICT system of the health care centres). This could be regarded as a good result. In addition, although the health care centres were not chosen randomly, they were located in both urban and rural areas with different population structures. Furthermore, the study sample matches fairly well the average users of Finnish health care centres [36], with a slight overrepresentation of female and elderly patients. However, we could not compare the characteristics of participants and non-participants, and a selection bias is therefore possible.

This study presents new information about measuring patient enablement and instrument validity in Finnish primary health care. One limitation of the study is that the validity of the comparison questions has not been evaluated in the Finnish context. Nevertheless, these questions have been used in earlier studies [37, 38]. In general, there are very few PROMs available that have undergone a rigorous assessment for validity and reliability in the Finnish context.

Conclusions

Patient enablement, regarded as one aspect of quality, could be measured with Q2, a single-item measure. Q2 was extracted from the PEI questionnaire; it has a strong correlation with the PEI score and hence a good reliability. Q2 seems to measure different concepts from, e.g. patient satisfaction or decision involvement, which suggests good construct validity. In addition, Q1, which was developed in the QUALICOPC study, seems to identify well those patients with lower patient enablement scores. Q1 is less correlated with the PEI score compared to Q2. The four-point Likert scale of Q1 is possibly too insensitive. In general, we suggest that both Q1 and Q2 are practicable measures. In particular, Q2 could be used instead of the PEI as a part of an assessment when measuring the quality of clinical performance in GP appointments.

Abbreviations

GP: General practitioner; NA: Not applicable; NPV: Negative predictive value; PEI: Patient Enablement Instrument; PPV: Positive predictive value; PROM: Patient-Reported Outcome Measure; QUALICOPC: Quality and Costs of Primary Care in Europe

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Authors' contributions

ET, EK, and TK designed the study. ET performed the statistical analyses and was the major contributor in drafting the manuscript. EK and TK contributed to the interpretation of the data analysis. They also critically revised the manuscript for important intellectual content. All authors have read and approved the final manuscript.

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Availability of data and materials

The datasets used and analysed during the current study are available from the corresponding author upon reasonable request.

Ethics approval and consent to participate

The study design was approved in December 2016 by the Ethics Committee of the Tampere Region.

Consent for publication

Not applicable.

Competing interests

There are no conflicts of interest connected to this paper. The authors alone are responsible for the content and writing of the paper.

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Patient Enablement After a Single Appointment With a GP: Analysis of Finnish QUALICOPC Data

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Abstract

Background: Patient enablement is described as patient's ability to understand and cope with illness after a consultation. The purpose of this study was to analyze factors associated with enablement in Finnish primary health care. An additional aim was to evaluate whether a single question could be used to measure enablement. **Methods:** A questionnaire survey was addressed to Finnish general practitioners (GPs) within the Quality and Costs of Primary Care in Europe (QUALICOPC) study framework. A trained fieldworker contacted nine patients for every participating GP. Two to 9 patients per GP (median 9 patients) completed the questionnaire. Patient enablement was measured by a single question based on the Patient Enablement Instrument questionnaire. Multivariate and multilevel analyses were performed to find variables that have an independent association with patient enablement. **Results:** A total of 1196 patients completed the QUALICOPC questionnaire. A total of 898 patients (75.1%) agreed that they felt better able to cope with their health problem or illness after an appointment with a GP, reflecting patient enablement. In the theme group analyses, 11 factors were found to have a statistically significant ($P < .05$) association with enablement. In the final multivariable model, positive perceptions of doctor-patient communication and patient satisfaction were positively associated with enablement. **Conclusions:** The results, using a single question to measure enablement, are comparable to previous findings on factors associated with enablement. Further research is needed and these results should be regarded as preliminary.

Keywords

patient enablement, general practice/family medicine, Finland, primary health care, patient satisfaction

Introduction

Patient enablement is defined as the patient's ability to understand and cope with life and illness after a consultation with a general practitioner (GP).[1-4] Although the concept of enablement is not completely consistent across studies,[5] in a review by Anden et al,[6] it is regarded as 1 of the 7 main concepts used to describe and evaluate GPs' consultations. Patient enablement is suggested to be a good patient-reported outcome measure (PROM) measuring the quality of care in primary health care.[2,5-7]

As a concept, enablement is paralleled with empowerment, which, in the field of health care, is seen as a process in which the patient develops, for example, skills, knowledge, and confidence in health-related decisions.[8] Empowerment is defined one of the core competencies of patient-centeredness by WONCA Europe.[9] Although empowerment is often used as a synonym for enablement, it is suggested that empowerment is an educational process, while enablement is more comprehensive since it includes managing and coping with illness.[5] Empowerment can also be achieved by the patients themselves,[10] whereas enablement is regarded more as a result of consultation.[1,2,5]

There are studies indicating that patient enablement leads to better clinical outcomes. In one study, enablement was positively associated with asthma balance adjustment and quality of life.[11] Among patients with type II diabetes, enablement has been associated with lower glycated hemoglobin (HbA1c) and body mass index (BMI) levels.[12]

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A study by Mercer et al[13] categorizes factors influencing enablement into patient, consultation, and system factors. Among patient factors, study results with regard to the patient's age are contradictory.[2,3,14,15] Patients with different ethnic backgrounds report different enablement perceptions than natives.[2,3] A worse state of health[13] and the presence of a chronic illness[3,13] have been associated with lower patient enablement.

A recent review of 24 studies indicated that the length of the consultation was one of the most investigated factors, being positively correlated with enablement in 8 out of 9 studies.[5] The patient's partnership with the doctor,[16,17] the GP's communication skills,[3,18,19] a more person-centered approach,[15,19,20] and patient involvement in decision making[19,21] may promote enablement. In addition, enablement is related to patient satisfaction.[5]

When regarding system factors, continuity of care has been positively associated with enablement in several studies.[2,3,15] Moreover, larger GP practice sizes[2] and poorer access to care[22] have been negatively associated with enablement.

Previous studies have shown that there could be cultural differences in terms of enablement both between different ethnic groups inside countries[2,3] and between countries.[23,24] To our knowledge, there are only a few studies on enablement in the Nordic countries: 2 studies have been conducted in Sweden[21,25] and 1 doctoral thesis in Finland has touched on enablement in a minor way.[26]

In terms of measuring enablement in general practice, Howie et al[1] have developed the Patient Enablement Instrument (PEI), a 6-item, 3-scale questionnaire about patients' perceptions of their ability to understand, cope, and manage with their illnesses and lives after a consultation. PEI has been widely used in studies conducted in several countries.[2,15,20,23-26] There is also a 3-item version of PEI available,[3] which has been used in 2 large studies.[14,22] Furthermore, in the international Quality and Costs of Primary Care in Europe (QUALICOPC) study (the QUALICOPC study design was approved in October 2011 by the Ethics Committee of the Tampere Region (permission number R11153), a single question, "Think about the doctor you visited today. Do you agree the following? 'After this visit, I feel I can cope better with my health problem/illness than before'," was designed based on the PEI questionnaire.[27]

The aim of this study was to investigate patient enablement measured by one question presented after a GP appointment at a primary health care center in Finland. We will analyze factors associated with patient enablement, and by comparing with earlier studies, we try to evaluate, if a single question method can be used to measure enablement.

Methods

We used Finnish data collected for the international QUALICOPC study, which is targeted to evaluate the primary health care systems of 31 European countries plus Australia, Canada, and New Zealand. The background and the design of the QUALICOPC study as well as the international process of developing the study questionnaires is described elsewhere.[27,28] The original questionnaires were translated from English to Finnish and validated by back translation to English.

According to the QUALICOPC study design, the goal was to reach 220 GPs in each country and nine patients for each GP to fill out the Patient Experience questionnaire. The Finnish data were collected in 2012. The purpose was to get a random sample of Finnish GPs; postal questionnaire was sent to 700 GPs using the register of Finnish Medical Association. Unfortunately, the response rates were so low that complementary recruitments, that is, sending questionnaires to GP specialist trainees in Pirkanmaa Hospital District area and contacting health centers directly, were needed. The process of gathering the study sample is presented in Figure 1.

Ultimately, a total of 139 GPs (one GP per health center/station) agreed to participate in the study according to the protocol. The patients were recruited by a trained fieldworker. Over a period of 1 day, a fieldworker asked all the patients visiting the participating GP to fill out the questionnaire in printed form, immediately after the appointment. Two to 9 patients per GP were recruited, altogether 1196, with a median of nine patients and a mean of 8.6 patients.

We measured patient enablement with the question "Think about the doctor you visited today. Do you agree the following? 'After this visit, I feel I can cope better with my health problem/illness than before'." The answer alternatives were yes/no/don't know. Before the analysis, "don't know" responses were combined with the "no" responses.

Based on the existing literature on factors that may affect patient enablement, we included a large number of variables in our analyses. The questions in the QUALICOPC study questionnaire were distributed in theme groups, presented in Table 1.

The themes "previous experience" and "health promotion" were designed by the authors; these were not included in the original QUALICOPC design. There is no direct research on the link between previous experience and enablement, but previous experience—particularly negative "surprises" in care—is known to influence patient satisfaction.[29] Furthermore, discussing health promotion issues with the doctor was an independent predictor of patient enablement in one study.[20]

In the statistical analysis (IBM SPSS, version 23), descriptive statistics and cross-tabulation were used to find the variables showing the strongest association on patient

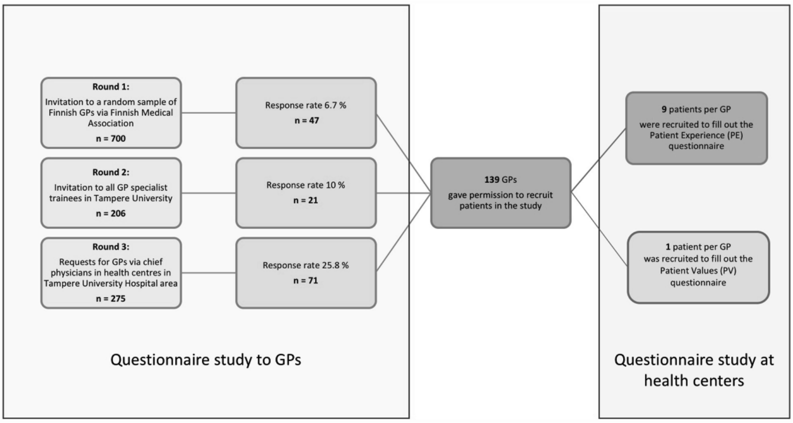

Figure 1. Gathering of the study sample of Finnish general practitioners (GPs) and their patients for the QUALICOPC study.

enablement. The variables were first tested with bivariate logistic regression analysis. Next, because of the large number of variables, forward-stepwise, multivariable logistic regression analyses were performed using theme groups. All statistically significant ($P < .05$) factors in the theme group analyses were included in the final multivariable model, which was performed with the enter method to find the variables with an independently significant association on enablement. Finally, to consider potential variation of enablement depending on GP level, multilevel modeling was used, that is, generalized linear mixed-effect models were fitted using a function glmer in the R Software environment for statistical computing and graphics, version 2.13.0; a random intercept was used to account for the variation in the number of patients per GP.

Results

A total of 1196 patients completed the QUALICOPC Patient Experience questionnaire. The distributions of the demographic factors are presented in Table 2. The mean age of the patients was 59 years (range 18-97 years), and 51.5% were older than 65 years. In response to the item "After this visit, I feel I can cope better with my health problem/illness than before," the patients' answers were distributed thus: 898 patients (75.1%) selected "yes," 36 patients (3.0%) selected "no," 233 patients (19.5%) selected "don't know," and 29 (2.4%) answers were missing.

In the bivariate analyses, 19 statistically significant factors ($P < .05$) were found (data not shown). Among patient factors, state of health and ethnicity/language skills were significant. Among consultation factors, significant factors included variables reflecting doctor-patient communication (4 questions), patient satisfaction (4 questions), and previous experience (1 question on health promotion, 1 question on discrimination, and 3 questions on practice safety). Among system factors, all 4 questions reflecting continuity of care were significant.

Results of the multivariate theme group analyses are presented in Table 3. All 11 statistically significant ($P < .05$) factors in these analyses were entered in the final multivariable model, the results of which are presented in Table 4. All models were adjusted for age and gender. In the final model, the strongest positive association was found with questions reflecting patient satisfaction and doctor-patient communication. The strongest variable reflected patient satisfaction (a "yes" answer to the question "This doctor doesn't just deal with medical problems but can also help with personal problems," odds ratio [OR] 3.42, 95% CI 2.40-4.85, $P < .001$). In addition, patient's lower level of language skills had a negative association with the dependent variable. The interpretation of the results did not change after taking into account the clustered nature of the data by multilevel modeling.

Discussion

According to this questionnaire study using Finnish QUALICOPC data, approximately three-quarters of the respondents agreed they felt better able to cope with their health problem or illness after a consultation with a GP, reflecting patient enablement. In our final multivariable model, none of the system factors and only one of the patient factors, namely language skills, had a significant association with enablement. Of the consultation factors, aspects of patient satisfaction and doctor-patient communication had a statistically significant association with patient enablement.

Table 1. Numbers of Questions in QUALICOPC Study Distributed Into Theme groups.

	No. of Questions
Patient factors	
Age	1
Gender	1
Chronic illness	1
State of health	1
Ethnicity	2
Education	1
Income	1
Working status	1
Consultation factors	
Doctor-patient communication	4
Patient satisfaction	5
Previous experience	10
Health promotion	1
Discrimination	5
Practice safety	4
System factors	
Access to care	2
Continuity of care	4

Table 2. Distribution of the Demographic Factors (n = 1196).

Factor	n (%)
Age, years	
<30	95 (7.9)
30-49	227 (19.0)
50-69	467 (39.0)
≥70	389 (32.5)
Missing	18 (1.5)
Gender	
Male	430 (36.0)
Female	761 (63.6)
Missing	5 (0.4)
Chronic illness	
No	354 (29.6)
Yes	836 (69.9)
Missing	6 (0.5)
State of health (patient's opinion)	
Very good	55 (4.6)
Good	412 (34.4)
Fair	617 (51.6)
Poor	109 (9.1)
Missing	3 (0.3)
Land of birth	
Finland	1,171 (97.9)
Other country	17 (1.4)
Missing	8 (0.7)
Language skills	
Fluent/native speaker	1,097 (91.7)
Sufficient/moderate/poor/none	87 (7.3)
Missing	12 (1.0)
Education	
Preprimary, primary, or no qualifications	757 (63.3)
Upper secondary level	313 (26.2)
Postsecondary or higher	105 (8.8)
Missing	21 (1.8)
Income	
Below average	477 (39.9)
About average	625 (52.3)
Above average	81 (6.8)
Missing	13 (1.1)
Working status	
Working, family business, civil service	291 (24.3)
Student, unemployed, mainly homemaker, or unable to work due to illness	218 (18.2)
Retired	679 (56.8)
Missing	8 (0.7)

In this study, many results were parallel to previous studies that used longer versions of PEI.[1-5,14,18,20,26] For instance, positive answers to questions reflecting patient satisfaction ("I would recommend this doctor to a friend or a relative" and "This doctor doesn't just deal with the medical problems but can also help with personal problems") had the strongest positive association on enablement. This finding is consistent with previous studies that found patient satisfaction to be associated with enablement.[4,5] Although the relationship between enablement and patient satisfaction is close, they are regarded as separate concepts.[2,4,6] Patient satisfaction is considered to be influenced by the fulfilment of the patient's expectations,[29,30] while enablement is considered to be less dependent of expectations.[18,31] A patient might feel satisfied with the care received without feeling enabled, and possibly vice versa. In addition, the patient's perception that the doctor is able to deal with other problems than just medical ones may reflect the GP's holistic approach and good patient-doctor partnership, which have been suggested to promote enablement.[16,17,20]

Furthermore, there is evidence of an association between doctor-patient communication and enablement.[3,18,26] Especially doctor's empathy has been strongly associated with enablement.[13,32] In this study, the question "The doctor asked questions about my health problem" showed a rather strong positive association with enablement. It seems reasonable that if the patient feels the doctor is interested in his or her present issue, feelings of ability, confidence, and coping are more likely to be achieved. It is noteworthy that 106 patients (10.2%) answered "no" to this question. This is rather a large proportion, indicating that there may be room for improvement in doctor-patient communication during GP appointments.

When considering patient factors influencing enablement in our study, none of the demographic factors besides

Table 3. Results of the Multivariable Theme Group Analyses on the Patients' Perceived Enablement Measured by a Single Question, Yes/No[a] (All Models Include Age and Gender).

Factor/Question	n	Odds Ratio	95% CI	*P*
Patient factors				
Model 1: All the demographic factors (9 factors), n = 1119				
Language skills	Fluent 1036 / Not fluent 83	0.54[b]	0.34-0.87	.012
Model 2: Demographic factors significant in the bivariate analysis (state of health, language skills, income), n = 1137				
Language skills	Fluent 1053 / Not fluent 84	0.55[b]	0.34-0.88	.013
Consultation factors				
Model 3: Doctor-patient communication (5 questions), n = 1148				
Age	1148	1.009/y[b]	1.00-1.02	.023
The doctor hardly looked at me when we talked	No 1026 / Yes 122	0.56[b]	0.37-0.85	.006
The doctor asked questions about my health problem	No 106 / Yes 1042	2.76[b]	1.81-4.19	<.001
Model 4: Patient satisfaction (5 questions), n = 1097				
I would recommend this doctor to a friend or relative	No 39 / Yes 1058	4.05[b]	2.07-7.94	<.001
This doctor doesn't just deal with medical problems but can also help with personal problems	No 624 / Yes 473	3.43[b]	2.48-4.76	<.001
Model 5: Previous experience/discrimination (5 questions), n = 1114				
The doctor or staff member acted negatively toward you (in the past 12 months)	No 1020 / Yes 94	0.61[b]	0.38-0.96	.033
Model 6: Previous experience/practice safety (4 questions), n = 1121				
In past 2 years, has a GP from this practice ever asked you about all the medication you take (also those prescribed by other doctors)?	No 512 / Yes 609	1.44[b]	1.09-1.91	.010
Model 7: Previous experience (10 questions), n = 1090				
In the past 12 months, has a GP from this practice talked to you about how to stay healthy (for instance, about diet, alcohol, or smoking)?	No 637 / Yes 453	1.47[b]	1.09-1.97	.011
System factors				
Model 8: Access to care (2 questions), n = 930				
No significant factors found				
Model 9: Continuity of care (4 questions), n = 1110				
The doctor had my medical records to hand	No 63 / Yes 1047	1.77[b]	1.02-3.06	.042
This doctor knows important information about my medical background	No 178 / Yes 932	1.60[b]	1.09-2.33	.016
This doctor knows about my living situation	No 441 / Yes 669	1.90[b]	1.38-2.55	<.001

[a] "No" includes "don't know" responses.

[b] Statistically significant.

patient's language skills were significant. In previous studies, patient speaking other languages have provided higher scores of enablement compared with natives.[2,3] In our study, speaking Finnish not fluently had a negative association with enablement, which may imply that those patients have had difficulties when communicating with doctors. Challenges in language and communication might lead to misunderstandings between doctor and patient and thus harm the ongoing process of care.

Strengths and Limitations

The survey data were collected to examine core aspects of primary health care on a large scale. Patient enablement was not the main focus of the survey, which limits the opportunities of the investigation. On the other hand, the diverse questionnaire made it possible to take into account multiple factors influencing patient enablement. In earlier studies, one limitation in multivariable and multilevel modeling has been the large number of missing values, meaning that not all of the respondents could be included in analyses.[3,33] One strength of our study is that despite the large number of variables, there were few missing values and the majority of the respondents (90.5%) could be included in the multivariable analysis. This suggests good quality data and acceptability of the questions. However, the data collection method in this survey might cause a potential cluster effect because answers could vary depending on individual GPs; we took this into account with the multilevel modeling.

Table 4. Results of the Final Multivariable Model,[a] Patient-Perceived Enablement Measured by a Single Question, Yes/No.[b]

	n	Odds Ratio	95% CI	*P*
Patient factors				
Language skills	Fluent 1004 / Not fluent 77	0.54[c]	0.32-0.93	.027
Consultation factors				
Doctor-patient communication: The doctor asked questions about my health problem	No 94 / Yes 987	2.39[c]	1.49-3.83	<.00
Patient satisfaction: I would recommend this doctor to a friend or relative	No 38 / Yes 1043	2.65[c]	1.27-5.54	.010
Patient satisfaction: This doctor doesn't just deal with medical problems but can also help with personal problems	No 620 / Yes 461	3.15[c]	2.17-4.58	<.001

[a] Model includes factors significant in the multivariable theme group analyses, adjusted for age and gender (altogether 13 factors), n = 1081.
[b] "No" includes "don't know" responses.
[c] Statistically significant.

This study was supposed be based on a random sample of Finnish GPs and their patients. Unfortunately, the response rate remained exceptionally low like in many other countries in the QUALICOPC study.[34] The response rate among GPs varied a lot between countries (from 6% to 79 %), and the goal of getting a random sample of GPs realized only in two-thirds of the countries.[34] Possibly GPs did not want to participate because they did not want their patients to be involved in the process. In Finland, we had to use complementary data collection techniques. The difficulties in the GP recruitment process could have distorted the sample; for example, the participating GPs might have had more positive attitude toward research.

However, the current sample of patients includes a large number of patients from both urban and rural areas. There were patients from all the age groups and the age distribution correlates well with the national register profile of all the patients who used Finnish health centers in year 2013.[35] We therefore regard that the sample represented the overall situation in Finland fairly well. Because of the completing data collection methods needed, only geographical representativeness may have suffered with emphasis placed on the situation in western Finland.

Our dependent variable ("Think about the doctor you visited today. Do you agree the following? 'After this visit, I feel I can cope better with my health problem/illness than before'") was a single question with no Likert-scale answer alternatives. A similar approach has been used before; Rohrer et al. measured empowerment with a single question[19]. Furthermore, Mead et al[14] used the categorization "not enabled" (PEI score 0) vs "enabled" (PEI score other than 0) in their study. Nevertheless, this question has not been used before and its validity in measuring enablement has not been tested. However, the results of our study, while comparable to earlier studies, encourage us to continue studying this question.

There is evidence that a shorter, 3-item version of PEI is as reliable as measuring enablement with the 6-item questionnaire,[3] which supports the idea that also a single question based on PEI could be used for measuring enablement. Nevertheless, our dependent question—as well as PEI itself in the Finnish context—needs further investigation to determine reliability and validity.

Conclusions

Demands and needs in health care are increasing rapidly due to growing wealth, information, and knowledge. Therefore, it is important to focus on processes and procedures that have real impacts—particularly benefits—on the patient's life and health. It is important to find outcomes for measuring clinical practice. In addition, if the patient achieves feelings of ability and better coping after seeing a doctor, it is significant in itself. Good patient satisfaction and doctor-patient communication are associated with higher enablement. This confirms the idea that we should devote to better doctor-patient interaction, in order to achieve better patient outcomes. Because of the characteristics of the data, the findings of this study should be considered preliminary. We will continue with further investigations on enablement and its measurement by a single question.

Authors' Note

The data that support the findings of this study are available from NIVEL (The Netherlands Institute for Health Services Research) but restrictions apply to the availability of these data, which were used under license for the current study, and so are not publicly available. Data are however available from the authors on reasonable request and with permission of NIVEL.

Declaration of Conflicting Interests

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PUBLICATION
IV

Patient enablement after a consultation with a general practitioner – explaining variation between countries, practices and patients.

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Patient enablement after a consultation with a general practitioner—Explaining variation between countries, practices and patients

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Abstract

Background: Patient enablement is a concept developed to measure quality in primary health care. The comparative analysis of patient enablement in an international context is lacking.

Objective: To explain variation in patient enablement between patients, general practitioners (GPs) and countries. To find independent variables associated with enablement.

Design: We constructed multi-level logistic regression models encompassing variables from patient, GP and country levels. The proportions of explained variances at each level and odds ratios for independent variables were calculated.

Setting and Participants: A total of 7210 GPs and 58 930 patients in 31 countries were recruited through the Quality and Costs of Primary Care in Europe (QUALICOPC) study framework. In addition, data from the Primary Health Care Activity Monitor for Europe (PHAMEU) study and Hofstede's national cultural dimensions were combined with QUALICOPC data.

Results: In the final model, 50.6% of the country variance and 18.4% of the practice variance could be explained. Cultural dimensions explained a major part of the variation between countries. Several patient-level and only a few practice-level variables showed statistically significant associations with patient enablement. Structural elements of the relevant health-care system showed no associations. From the 20 study hypotheses, eight were supported and four were partly supported.

Discussion and Conclusions: There are large differences in patient enablement between GPs and countries. Patient characteristics and patients' perceptions of consultation seem to have the strongest associations with patient enablement. When comparing patient-reported measures as an indicator of health-care system performance, researchers should be aware of the influence of cultural elements.

KEYWORDS
cultural dimensions, general practice, multi-level modelling, patient enablement, primary health care

1 | INTRODUCTION

Patients' evaluation of care is a key element of the quality of health care. To study this, many patient-reported outcome measures (PROMs) have been created.[1] Most PROMs are disease-specific and concern planned care.[2] In primary care, the range of problems that patients present during consultations is unrestricted, a specific diagnosis is often not reached,[3,4] and a large part of care is unplanned. Therefore, a generic approach to PROMs is required. One such approach is patient enablement.

Patient enablement is a concept that was developed to measure quality of care, especially in primary care. It is defined as the patient's ability to understand and cope with illness and life after a consultation with a doctor.[5] It could be measured using the Patient Enablement Instrument (PEI), a six-item questionnaire addressed to a patient after a consultation.[5] It is suggested that the PEI is a good PROM[5-7] and it has been applied in several countries.[7-15] Also, a single-item measure has been shown to adequately identify patients with low enablement with high negative predictive value.[16]

In previous studies, several factors are found to be associated with patient enablement. These could be divided into patient, consultation and system factors.[17] Patient factors include patient characteristics, expectations and skills. Consultation factors include actions and perceptions of the consultation and general practitioner (GP) characteristics. System factors include organizational characteristics, such as characteristics of GP/practices or the structure of the health-care system. A conceptual model of the process leading to patient enablement is presented in Figure 1.

When comparing separate studies, patient enablement seems to differ across countries. However, only one study directly compares patient enablement between countries[15] and only a few report on comparisons of patient enablement between practices or doctors.[18-22] Furthermore, to our knowledge there are no publications that consider the possible effect of cultural aspects on enablement. In other words, a comparative analysis to explain the differences in patient enablement between health-care systems and countries is lacking.

The aim of this study is to explain variations in patient enablement between patients, GPs and countries. Based on the current literature, we have formulated hypotheses concerning the process of patient enablement. We test these hypotheses with a large international data set from 31 countries, using multi-level modelling. We use a single-item measure as an indicator of patient enablement.

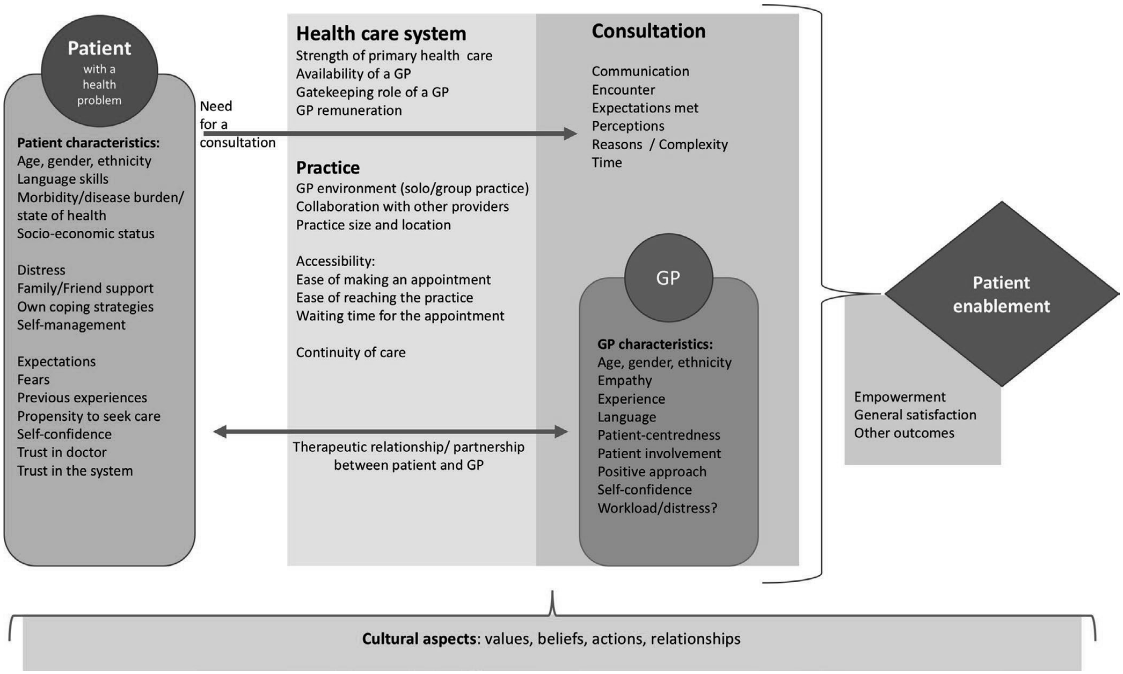


FIGURE 1 Patient enablement process

To our knowledge, this is the first study of patient enablement that takes the differences between health-care system features or cultural aspects into consideration.

2 | HYPOTHESES

In the following sections, we present the current knowledge on factors associated with enablement and hypothesize the mechanisms behind these associations. Consequently, we formulate our study hypotheses.

2.1 | Patient-level hypotheses

2.1.1 | Patient characteristics

At the patient level, it could be suggested that 'who the patient is and how they act' is essential to how patients evaluate the consultation. Previous results are contradictory regarding age[7-10,19,20] and gender.[7,19,20] With the exception of one study,[8] neither education nor income has shown any association with enablement.[7,17]

Hypothesis 1 *Patient age, gender or socio-economic status is not associated with patient enablement.*

Consultation in the patient's native language seems to promote enablement.[23] On the other hand, immigrants have reported higher enablement scores than natives in the UK.[20,24,25] Patients' culturally conditioned attitudes towards authorities (eg doctors) might influence the way patients evaluate the consultation.

Hypothesis 2a *Patients' non-immigrant background is associated with lower enablement.*

Hypothesis 2b *Patients' weak language skills are associated with lower enablement.*

Considering patient health, lower self-perceived health,[8,17,19] the presence of a chronic illness[7,22] or multimorbidity[17] has been associated with lower enablement.

Hypothesis 3 *The presence of chronic illness or lower self-perceived health is associated with lower enablement.*

2.1.2 | Patient-perceived consultation factors

It is likely that enablement increases when patients can understand their doctor and feel confident that their collaboration functions well. Patients' positive perceptions regarding doctor-patient communication[7,25-27] as well as involvement in decision making[15] have been associated with higher levels of enablement. Furthermore, patient satisfaction has shown a rather strong positive association with enablement.[20,22,28,29]

Hypothesis 4 *Negative perceptions of communication or patient involvement are associated with lower enablement.*

Hypothesis 5 *Lower patient satisfaction is associated with lower enablement.*

In general, enablement may be higher when there is a clear problem to solve in the consultation. Having an appointment due to long-standing conditions[17] or complex reasons[5,30] is found to be associated with lower enablement.

Hypothesis 6 *A consultation for a long-standing condition is associated with lower enablement.*

Although there are no studies about previous experiences of health care and enablement, we expect that previous negative experiences are associated with lower enablement.

Hypothesis 7 *Previous negative experiences of health care are associated with lower enablement.*

Patients' trust in the doctor seems to promote enablement,[31] and we also expect it to apply in this study. In addition, particularly in non-gatekeeping primary care systems, the fact that patients visit a GP instead of another specialist might reflect their confidence in a GP. Thus, we expect that a patient's propensity to seek care from a GP might promote enablement.

Hypothesis 8 *Lower trust in the doctor is associated with lower enablement.*

Hypothesis 9 *Lower propensity to seek care from a GP is associated with lower enablement.*

2.1.3 | Patient-perceived system factors

Better continuity of care, especially when patients know the doctor, tends to support higher enablement.[7,8,11,20,24,26,32,33] It seems reasonable to hypothesize that if the patient and the doctor know each other, and particularly if the relationship is good, enablement after an appointment is easier to achieve. In addition, poorer access to care, as indicated by longer waiting times, seems to be associated with lower enablement.[34]

Hypothesis 10 *Weaker continuity of care is associated with lower enablement.*

Hypothesis 11 *Weaker access to care is associated with lower enablement.*

2.2 | GP-/practice-level hypotheses

2.2.1 | GP and practice characteristics

It seems reasonable to hypothesize that GP characteristics are important for enablement. However, current knowledge about such associations is scarce. A GP's age and gender have shown to have either partial[8] or no effect[7] on patient enablement in previous studies. In addition, organizational structure might relate to practice outcomes. GPs working in single-handed practices[20] or those that have a medium-sized patient list[21] have been associated with higher patient enablement. Results related to patient enablement in relation to GP workload are contradictory.[8,22] Furthermore, we suggest that salaried GPs have less incentive to enable patients. Practice location may have an impact on continuity of care [35,36] and thus be associated with enablement.

Hypothesis 12 *GP's age and gender have no association with patient enablement.*

Hypothesis 13 *GP's practice accommodation (duo or group practice), remuneration (salaried GPs) or practice location (rural) is associated with lower enablement.*

Hypothesis 14 *GP's perception of high workload or work-related stress is associated with lower patient enablement.*

2.2.2 | Practice-related consultation characteristics

Among practice-related consultation characteristics, the length of the consultation is probably the most studied factor, revealing that longer consultations are associated with higher enablement.[5,20,25,30,33,34,37] Associations of other practice-related consultation characteristics with patient enablement have not been studied. We expect that GPs who have opportunities to do more varied work, for example by performing technical procedures, collaborating with other providers and thus taking care of their patients more extensively, may enable patients better.

Hypothesis 15 *Shorter consultation times are associated with lower enablement.*

Hypothesis 16 *A lack of opportunities for GPs to collaborate with other providers or perform technical procedures is associated with lower patient enablement.*

2.3 | Country-level hypotheses

2.3.1 | Health-care system characteristics

The structural strength of primary health care could be assessed from three dimensions: governance, economic conditions and workforce development.[38,39] In this study, we expect that a weaker primary care structure will reduce expectations towards GPs and thus lead to lower enablement. Furthermore, in gatekeeping countries, the GP is usually the first contact in health care. This could promote continuity of care and thus enablement.

Hypothesis 17 *A weaker primary health-care structure is associated with lower enablement.*

Hypothesis 18 *Enablement is lower in non-gatekeeping countries.*

2.3.2 | Cultural dimensions

Culture could be defined as 'the customary beliefs, social forms and material traits of a racial, religious or social group'; or 'the integrated pattern of human behaviour that includes thought, speech, action and artefacts'.[40] Indeed, culture may have an impact on our actions and feelings, and shape what we value in health care.[41-44] For example, in a study conducted in eight countries, the statement 'during the consultations a GP should have enough time to listen, talk and explain to me' was ranked very/most important by 85%-93% of the respondents.[42] In contrast, the statement 'it should be possible to see the same GP at each visit' was ranked rather important in Norway (rank 6 of 38) and significantly less important in the UK (rank 28 of 38).[42]

In an analysis of the QUALICOPC data for Switzerland, enablement was linked with the linguistic area.[22] Otherwise, there are no publications that link patient enablement with cultural differences. Cultural differences in doctor-patient relationships might have an effect on enablement. In some countries, doctors are seen more as authorities, whereas in others doctors are seen more as equals. Furthermore, in cultures with a stronger emphasis on individual than societal values, patients might be more difficult to satisfy, and this might lead to lower enablement.

Hypothesis 19 *Patient enablement is lower in countries with less emphasis on patient enablement.*

Hypothesis 20 *Cultural dimensions are associated with enablement: a greater power distance and more emphasis on individual values are associated with lower enablement.*

3 | METHODS

3.1 | Population

In this study, we use the data collected in the Quality and Costs of Primary Care in Europe (QUALICOPC) study. The details of the QUALICOPC study design and data collection are described elsewhere.[45-47] The purpose of the QUALICOPC study is 'to evaluate the system, the practice and the patient' by studying different primary care systems in 31 European countries, along with Australia, Canada and New Zealand. The goal was to reach 75 GPs in Cyprus, Iceland, Luxembourg and Malta, and 220 in all other countries. Only one GP per practice could participate in the study. For each GP, the goal was to recruit nine patients to fill in the Patient Experience Questionnaire and one patient to fill out the Patient Values Questionnaire.[46] Patients were recruited in the GPs' waiting room.

3.1.1 | Measurements and data

In this study, patient enablement was measured using a single question 'After this visit, I feel I am able to cope better with my symptom/illness than before the appointment', with possible answers being yes/no/don't know. The don't knows were combined with the no responses. When compared with the Patient Enablement Instrument, which is considered the gold standard for measuring patient enablement, this question seems to adequately identify patients with low enablement.[16]

Operationalization of the concepts used as independent variables is presented in File S1. Some of the constructs were operationalized through scale variables. These scales were calculated using the ecometric approach, in which multi-level analysis is used to construct a contextual variable at a higher-level unit based on individual variables. The scale construction process has been used in previous studies using QUALICOPC data and is described in detail elsewhere.[48] To improve interpretability of the models, the scale scores were transformed into z-scores (score minus the average divided by the standard deviation); hence, a score of 0 represents the mean score and a score of 1 represents one standard deviation increase.

We also used data from the Primary Health Care Activity Monitor for Europe (PHAMEU) study[49] to include country-level variables regarding primary care dimensions. The PHAMEU dimensions included in this study are governance, economic conditions, workforce development and total structure.[38]

In addition, we used Hofstede's dimension model of national cultures, based on a data set originally collected from employees of a multinational corporation,[50] applied in 111 countries.[51] The model consists of six dimensions that reflect societal tendencies of (1) people to feel independent instead of interdependent (individualism vs. collectivism); (2) attitudes towards unequal power distribution (power distance); (3) social endorsement for use of force (masculinity vs. femininity); (4) tolerance of uncertainty and ambiguity (uncertainty avoidance); (5) attitudes towards change (long-term vs. short-term orientation); and (6) attitudes towards good things in life (indulgence vs. restraint).[50,51] More detailed explanations of these dimensions are presented in File S2. In Hofstede's model, each nation has a unique combination of these six dimensions, reflecting stable cultural values of the society.

The original QUALICOPC data set includes a total of 34 countries, whereas Hofstede's data do not include Cyprus, Iceland and FYR Macedonia. In order to maintain comparability between the different models, these three countries were left out of the analyses.

3.2 | Statistical analyses

Due to the collection method, the structure of the QUALICOPC data is hierarchically clustered, meaning that patients are nested within their GPs and the GPs are nested within countries, forming three levels: patient, GP and country levels. With this kind of data, multi-level modelling should be used.[52] Multi-level modelling allows the analysis of individual-level outcomes in relation to variables at the same or higher levels and to split up the total variation in an outcome variable into parts that are attributable to the different levels.[53]

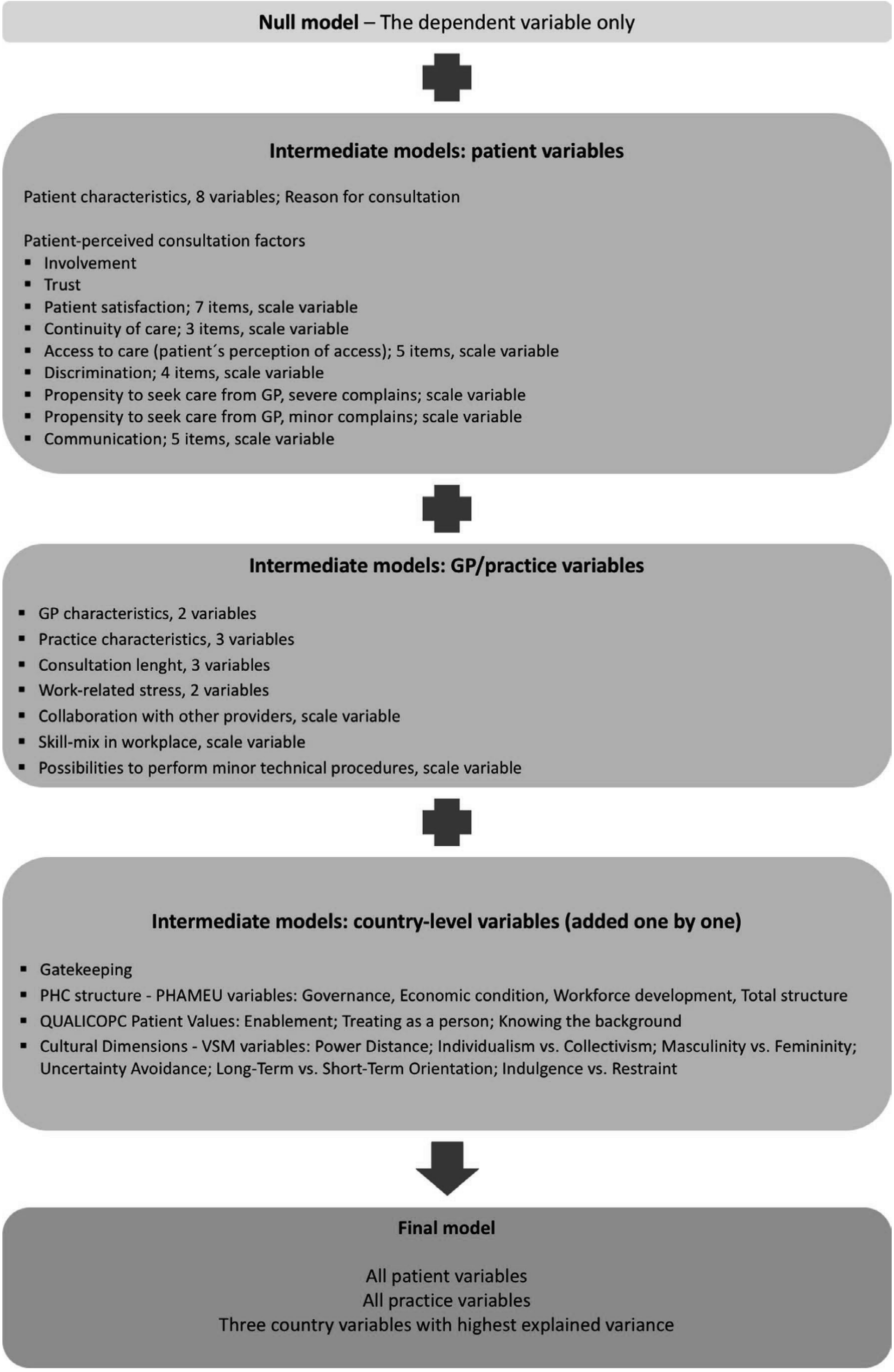
Multi-level, multivariable logistic regression models were constructed in order to explain variations in patient enablement between patients, practices/GPs and countries, and to find significant factors associated with lower enablement. The modelling strategy is presented in Figure 2. First, 'a null model' (Model 0) was performed to explore variances between countries and practices. To calculate the share of variance at practice and country levels, individual-level variance was approximated by $pi^2/3$. Second, patient-level variables (patient characteristics and patient perceptions of the consultation) were included (Model 1). Next, practice-level variables (GP and practice characteristics) were added to Model 1 (Model 2). Finally, country-level variables (health-care system characteristics, primary care dimensions and cultural dimensions) were added one by one. Three country-level variables that could best explain the variation were then retained in the final model (Model 3). The explanatory power of the models was evaluated by calculating the explained variance of each model compared to the variance in the null model.

Also, median odds ratios (MORs) were calculated for each model. The MOR is the median odds ratio between two randomly chosen individuals with the same covariates but from different clusters.[54] When using this approach, differences in probability/risk are entirely quantified by the cluster-specific effects.[54,55] The MOR is comparable with individual-level ORs and thus helps to quantify the extent of clustering.[55]

As the number of higher-level variables should not exceed 10% of the number of higher-level units,[53] only three country-level variables could be included simultaneously in the final model. Missing values were excluded from the analyses. For two variables (trust in doctors in Australia and Poland and mean consultation time in Australia), there were no observations. Thus, value imputation (replacing the missing value by an average value of the subset of other countries) was used in order to minimize the loss of data.

4 | RESULTS

Data collected from a total of 7210 GPs from 31 countries were used in this analysis. From the practices of these GPs, 61 458 patients were recruited to participate. The distributions of patient and GP characteristics are presented in Tables 1 and 2. Among the participants, 58 930 patients answered the dependent variable 'After this visit, I feel I am able to cope better with my symptom/illness than before the appointment'. Some 13 367 (21.7%) answered 'no' or



Null model – The dependent variable only

Intermediate models: patient variables

Patient characteristics, 8 variables; Reason for consultation

Patient-perceived consultation factors

- Involvement
- Trust
- Patient satisfaction; 7 items, scale variable
- Continuity of care; 3 items, scale variable
- Access to care (patient´s perception of access); 5 items, scale variable
- Discrimination; 4 items, scale variable
- Propensity to seek care from GP, severe complains; scale variable
- Propensity to seek care from GP, minor complains; scale variable
- Communication; 5 items, scale variable

Intermediate models: GP/practice variables

- GP characteristics, 2 variables
- Practice characteristics, 3 variables
- Consultation lenght, 3 variables
- Work-related stress, 2 variables
- Collaboration with other providers, scale variable
- Skill-mix in workplace, scale variable
- Possibilities to perform minor technical procedures, scale variable

Intermediate models: country-level variables (added one by one)

- Gatekeeping
- PHC structure - PHAMEU variables: Governance, Economic condition, Workforce development, Total structure
- QUALICOPC Patient Values: Enablement; Treating as a person; Knowing the background
- Cultural Dimensions - VSM variables: Power Distance; Individualism vs. Collectivism; Masculinity vs. Femininity; Uncertainty Avoidance; Long-Term vs. Short-Term Orientation; Indulgence vs. Restraint

Final model

All patient variables
All practice variables
Three country variables with highest explained variance

FIGURE 2 The modelling strategy

'don't know', interpreted as lower enablement. Table 3 presents the distribution of the dependent variable in each country. The distributions varied largely between countries: for example, the proportion of lower enablement varied from 9.2% in New Zealand to 39.6% in Sweden.

4.1 | Multi-level modelling—explaining variation

The model variances, proportions of explained variances and the median odds ratios (MORs) for each level are presented in Table 4. In the null model, 16% of the variance is at practice level and 6% at country level. For ease of interpretation of the amount of variation at the different levels, we also calculated the median odds ratios (MORs) for practice and country levels. These were 2.01 and 1.41, respectively, and can be compared to the odds ratios of the independent variables. Thus, the effect of the clusters (the differences between practices or countries) in enablement is greater than the effect of most of the independent variables. After adding all patient-level variables, the model explained only 0.96% of country variation and 20.3% of practice variation. In addition, almost all patient variables in the model had a statistically significant association with the dependent variable. Since having all the variables in the model explained a higher proportion of the variances, all the variables were kept in the model.

Adding GP/practice variables to the model decreased the proportion of explained practice variance, reflecting that the true practice variance was masked in the simpler model. In addition, it increased the explained country variance to 14.2%. Thus, all GP-level variables were kept in the model.

Finally, country variables were added one by one, and those that explained the highest proportion of country variance were included in the final model. The three country variables best explaining the country-level variation were all cultural dimensions: individualism vs. collectivism, uncertainty avoidance and long-term orientation. None of the structural elements of primary care system were good explainers. Comparisons of country-level variables are presented in Table 5. With the final model, 50.6% of the country variance and 18.4% of the practice variance could be explained.

4.2 | Logistic regression—evaluating associations

Several independent variables had statistically significant associations with the dependent variable, i.e. lower enablement. Table 5 presents the results of the final multi-level logistic regression model and the conclusions for the study hypotheses. Of the 20 study hypotheses, eight were rejected and eight supported, and four of the hypotheses were partly supported and partly rejected. Also, File S3 includes all the logistic regression results of Models 1–3, the level variances and the median odds ratios (MORs) in each model.

TABLE 1 Distribution of patient characteristics, n = 61 458

	n	%
Age		
17-39	18 024	29.3
40-64	27 330	44.5
65 or over	15 061	24.5
Missing	1043	1.7
Gender		
Male	23 735	38.6
Female	37 257	60.6
Missing	466	0.8
Household income		
Below average	18 428	30.0
Around average	34 487	56.1
Above average	7573	12.3
Missing	970	1.6
Education		
No qualifications obtained/pre-primary education or primary	16 529	26.9
Upper secondary level of education	23 147	37.7
Post-secondary, non-tertiary education	20 655	33.6
Missing	1127	1.8
Ethnicity		
Native	53 369	8.8
Second-generation immigrant	2624	4.3
First-generation immigrant	4837	7.9
Missing	628	1
Language skills		
Fluently/native speaker level	49 086	79.9
Sufficiently	11 618	18.9
Missing	754	1.2
Chronic disease		
No	30 582	49.8
Yes	30 505	49.6
Missing	371	0.6
Self-perceived health		
Very good	37 301	60.7
Poor	23 875	38.9
Missing	277	0.5
Consultation reason		
Illness	22 958	37.4
Medical check-up	15 001	24.4
Prescription, certificate or referral	12 123	19.7
Other	11 054	18.0
Missing	313	0.5

When regarding patient-level variables, patients with a household income of around average, as well as older and female patients, had a smaller risk of lower enablement. Furthermore, positive perception of patient involvement, patient satisfaction, continuity of care, access to care, no discrimination and propensity to seek care from a

TABLE 2 Distribution of GP characteristics, n = 7120

	n	%
Age		
21-39	1095	15.4
40-64	5578	78.3
65 or over	370	5.2
Missing	77	1.1
Gender		
Male	3395	47.7
Female	3697	51.9
Missing	28	0.4
Practice location		
Large (inner city)	2137	30.4
Suburbs or small town	2477	35.2
Urban-rural or rural	2424	34.4
Missing	82	1.2
GP accommodation		
Solo practice	2856	40.1
Duo or group practice	4194	58.9
Missing	70	1.0
GP remuneration		
Salaried	2324	32.6
Self-employed	4621	64.9
Mixed	72	1.0
Missing	103	1.5
GP-perceived work-related stress		
Agree	4073	57.2
Disagree	2953	41.5
Missing	94	1.3
GP-perceived effort-reward balance		
Agree	3354	47.1
Disagree	3676	51.6
Missing	90	1.3
Mean consultation time (minutes, GP estimate)		
Mean	14.5	
SD	7.1	
Range	0-120	
Missing	240	
Mean number of face-to-face consultations per day (GP estimate)		
Mean	30.7	
SD	16.0	
Range	0-88	
Missing	49	

GP were associated with a decreased risk of lower enablement. The strongest associations with decreased risk of lower enablement were found for positive patient satisfaction (OR 0.54, *P* < .001, 95%CI 0.52-0.56) and positive perception of patient involvement (OR 0.58, *P* < .001, 95%CI 0.54-0.62). In contrast, poorer self-perceived health (OR 1.29, *P* < .001, 95%CI 1.22-1.37) or higher educational level was associated with higher risk of lower enablement. Patients who were not working or retired (students, unemployed patients, patients unable to work due to illness and homemakers), or patients whose reason for consultation was due to prescription, certificate or referral on categorized as 'other', were more likely to report lower enablement. In addition, patients who reported having a lack of trust in doctors in general had increased risk of lower enablement (OR 1.58, *P* < .001, 95%CI 1.41-1.77).

From the GP-/practice-level variables, a higher number of face-to-face consultations were associated with a decreased risk of lower enablement (OR 0.82, *P* = .02, 95%CI 0.70-0.97), whereas a mixed urban-rural or rural practice location was associated with an increased risk of lower enablement (OR 1.12, *P* = .01, 95%CI 1.03-1.22). From three country-level variables in the final model, only long-term orientation had a statistically significant association with the dependent variable (OR 1.27, *P* < .001, 95%CI 1.11-1.46). This indicates that patients in more long term–oriented cultures have a decreased risk of lower enablement.

5 | DISCUSSION

In this study, we found that patient enablement, measured by a single question, varies largely between 31 countries. By using multivariable, multi-level models, this variation between countries could be explained to a rather large extent. The logistic regression results of this study show that, for example, patient's older age, female gender and positive perceptions of patient satisfaction and patient involvement are associated with decreased risk of lower enablement. In contrast, for example, patient's worse self-perceived health, reason for consultation and lower trust in doctors are associated with increased risk of lower enablement.

In general, patient characteristics and patients' perception of the consultation do not explain the variation between countries. However, they do explain variance between practices to some extent. Furthermore, although adding GP-level variables to the models improved it, the overall explained practice variance remained rather low—over 80% of variance remained unexplained. It is possible that the variables available in the QUALICOPC framework may not have included all the potentially important factors related to practices and GPs. In particular, the personal characteristics of a GP could have a strong influence on enablement; it is assumed that there are 'high enablers' and 'low enablers' among GPs.[20]

None of the PHAMEU structural elements of the health-care system explained enablement variation between countries, contrary to our hypothesis. None of them was statistically associated with enablement. Thus, it seems that the mechanisms behind patient enablement are not system-associated but more culture-associated.

The cultural dimension, long-term orientation, was the only country-level variable that had a statistically significant association with patient enablement. According to the results of this study,

TABLE 3 Distribution of the dependent variable 'After this visit, I feel I am able to cope better with my symptom/illness than before the appointment', by country, n = 61 458

	No + don't know		Yes		Missing		Total
	N	%	N	%	N	%	N
Austria	276	17.3	1216	76.2	104	6.5	1596
Belgium	856	23.3	2611	71.1	207	5.6	3674
Bulgaria	611	30.9	1331	67.4	33	1.7	1975
Czech Republic	454	22.9	1500	75.7	28	1.4	1982
Denmark	333	17.7	1407	74.8	140	7.4	1880
Estonia	325	28.9	754	67.0	47	4.2	1126
Finland	269	20.0	900	66.9	**177**	**13.2**	1346
Germany	391	18.5	1683	79.5	44	2.1	2118
Greece	461	23.6	1474	75.4	21	1.1	1956
Hungary	636	32.9	1213	62.7	87	4.5	1936
Ireland	184	11.0	1299	77.4	196	11.7	1679
Italy	363	18.6	1474	75.5	116	5.9	1953
Latvia	577	29.8	1297	67.0	63	3.3	1937
Lithuania	572	28.4	1428	70.9	**13**	**0.6**	2013
Luxembourg	133	18.7	531	74.8	46	6.5	710
Malta	103	16.5	511	81.6	12	1.9	626
Netherlands	649	32.6	1170	58.8	172	8.6	1991
Norway	523	34.1	889	58.0	121	7.9	1533
Poland	505	25.6	1457	73.8	**12**	**0.6**	1974
Portugal	240	12.8	**1598**	**85.0**	43	2.3	1881
Romania	413	20.9	1547	78.3	16	0.8	1976
Slovakia	672	35.1	1159	60.5	85	4.4	1916
Slovenia	521	24.0	1571	72.4	79	3.6	2171
Spain	778	20.9	2882	77.3	69	1.9	3729
Sweden	**310**	**39.6**	**398**	**50.8**	75	9.6	783
Switzerland	368	20.5	1389	77.5	35	2.0	1792
Turkey	499	19.1	2100	80.3	**15**	**0.6**	2614
UK	237	18.1	949	72.4	124	9.5	1310
Australia	125	10.3	1022	84.5	62	5.1	1209
Canada	874	12.5	5828	83.6	270	3.9	6972
New Zealand	**109**	**9.2**	975	81.9	106	8.9	1190
Total	13 367	21.7	45 563	74.0	2618	4.3	61 548

Note:: Lowest and highest proportion of each answer are bolded.

people in more long term–oriented cultures have a decreased risk of lower enablement. This cultural dimension deals with change; in long term–oriented cultures, 'the basic notion of the world is that it is in flux, and preparing for the future is needed'.[51] In short term–oriented cultures, 'the world is essentially as is was created, so the past provides a moral compass'.[51] To our knowledge, there is no other evidence of a role of this dimension in the health-care context. Perhaps people in more long term–oriented cultures adopt a more flexible attitude to changes in health as well.

The fact that the structure of the primary care system is not related to enablement, but a dimension of national culture is, has implications for the international comparison of PROMs. Before using PROMs as indicators for health system performance, the relationships with specific characteristics of health systems on the one hand and cultural characteristics on the other should be further explored. Previous research has shown that cultural values are related to different aspects of primary care.[56]

Patient characteristics show rather strong associations with patient enablement. In particular, a patient's age and gender have a clear association with patient enablement, even after adjusting for several other variables. This is against the a priori expectations which were based on contradictory results in the previous literature. However, in a large systematic review, older age is related to higher patient satisfaction,[57] and the mechanism behind achieving enablement might

TABLE 4 Model variances, explained variances and median odds ratios (MORs) for each level

Model variances	Null model	Model 1	Model 2	Model 3 Final model
Country variance	0.2598	0.2573	0.2230	0.1284
Practice variance	0.661	0.5264	0.5398	0.5398
Country variance explained, %		0.96	14.2	50.6
Practice variance explained, %		20.3	18.4	18.4
MOR (median odds ratio) for country level	1.63	1.62	1.56	1.41
MOR for practice level	2.17	2.00	2.01	2.01

be similar. It may be that young patients are more critical of care than the elderly, leading to lower enablement. In addition, elderly patients may have built a relationship with their GPs, after seeing them more often, and thus more easily experience enablement. Furthermore, women tend to have a more active attitude towards treatment and health,[58] and this could also promote reported enablement following consultation.

The patients' perception of a consultation seems to play a role in the enablement process. As expected, positive perceptions of the doctor-patient relationship (eg involvement and continuity of care) decreased the risk of poorer enablement. Previous evaluations of doctors' patient-centeredness,[27,33] partnership with the patient [26] or patient satisfaction[20,22,28,29] have suggested positive associations with enablement. Furthermore, it is encouraging to find that the propensity to seek care from GPs significantly decreased the risk of poorer enablement—possibly a reflection of patients' trust in primary health care. Against expectations, the patient's perception of communication was not associated with enablement in our study.

Two of our five GP-level hypotheses were confirmed. As expected, GP's age and gender were not associated with patient enablement. Instead, practice location played a role: more rural location was associated with a higher risk of lower enablement. This could be due to different patients and problems in rural compared to urban areas. Also, poorer continuity may have an effect: for instance, a Norwegian study showed that continuity was better in larger and usually more central municipalities.[36] Better resources and access to care in more urban areas might be one reason for this result. In addition, the doctors (n = 1331) who meet more patients during a regular workday (over 45 compared to less than 15 patients) tend to enable their patients more than their colleagues with fewer daily patient contacts. This is contrary to the evidence [5,20,25,30,33,34,37] that a longer consultation time promotes enablement—the mechanism behind this result must be something other than just the minutes spent. Perhaps in systems where the GPs have as many as 45 consultations per day, patient has different expectations towards consultations. Also, the reasons for an encounter may be simpler in these systems.

6 | STRENGTHS AND LIMITATIONS

A strength of this study is the large sample of GPs and their patients from many countries. Use of multi-level modelling with this kind of data is necessary—the robust statistical analyses are the major strength of the study.

The QUALICOPC framework was designed to study and compare primary health-care properties and patient perceptions between countries, not patient enablement in itself. Therefore, the measurement was a single-item question and not the 'gold standard' Patient Enablement Instrument with six questions. Nonetheless, this question seems to be adequate for identifying patients with low enablement scores.[16] Furthermore, not all potential factors could be included in the analyses. For example, more detailed data of GP personal characteristics or actual time consumed in the consultation were not available. In addition, despite the large amount of data, loss of observations due to missing values—a common challenge with a logistic regression analysis—and merging several data sets collected in separate studies caused some loss of data. Additionally, there could be a circularity phenomenon for all perceptual patient variables, for example patient satisfaction and trust in doctors. Lastly, since this is a study about associations, conclusions in terms of causality cannot be drawn.

7 | CONCLUSIONS

In the international context, cultural dimensions and GP and practice characteristics explain patient enablement variation between countries to a rather large extent. Patient and—to some extent—practice characteristics seem to explain a minor part of practice variation. In contrast, structural elements of health care show no significant associations. In addition, several independent variables seem to be associated with patient enablement. GPs and researchers should be aware of the potential importance of cultural aspects, particularly when comparing health survey results between countries and adopting measurements across countries.

8 | CLINICAL IMPLICATIONS

Enablement is a goal worth pursuing for all patients, in order to ensure an experience of coping and understanding. Doctors should aim to strengthen patient enablement, not only as a measure of

TABLE 5 Summary of the study hypotheses and the results of the logistic regression analysis in the final model: the odds ratio (OR) to respond negatively to the dependent question ‘After this visit, I feel I can cope better with my symptom/illness than before the appointment’

Patient-level hypothesis	OR	p	95%CI	Conclusion for hypothesis
H1. Patient's age, gender or socio-economic status is not associated with patient enablement				**Rejected**
Patient's age: Under 40 y (ref)				
40-64 y	**0.84**	**<0.001**	**0.79-0.89**	
Over 65 y	**0.81**	**<0.001**	**0.73-0.90**	
Patient's gender: Male (ref)				
Female	**0.87**	**<0.001**	**0.83-0.92**	
Education: No/primary level (ref)				
Upper secondary level	1.04	0.25	0.97-1.11	
Post-secondary level	**1.09**	**0.03**	**1.01-1.18**	
Household income: Below average (ref)				
Around average	**0.91**	**0.003**	**0.86-0.97**	
Above average	0.93	0.15	0.85-1.02	
Occupation: Working, including civil service and self-employment (ref)				
Retired	0.93	0.13	0.85-1.02	
Student, unemployed, unable to work, mainly homemaker	**1.07**	**0.04**	**1.00-1.14**	
H2a. Patient's non-immigrant background is associated with lower enablement.				**Rejected**
Ethnicity: Native (ref)				
Second-generation immigrant	1.07	0.28	0.95-1.21	
First-generation immigrant	0.90	0.07	0.81-1.01	
H2b. Patient's weak language skills are associated with lower enablement.				**Rejected**
Language skills: Fluently/native speaker level (ref)				
Sufficiently/moderately/poorly/not at all	1.01	0.89	0.93-1.09	
H3a. Lower self-perceived health is associated with lower enablement.				**Supported**
Self-perceived health: Very good/good (ref)				
Fair/poor	**1.29**	**<0.001**	**1.22-1.37**	
H3b. The presence of chronic illness is associated with lower enablement.				**Rejected**
Chronic disease: No (ref)				
Yes	0.98	0.61	0.93-1.05	
H4a. Negative perception of patient involvement is associated with lower enablement.	**Supported**			
Patient involvement: No (ref)				
Yes	**0.58**	**<0.001**	**0.54-0.62**	
H4b. Negative perception of communication is associated with lower enablement				**Rejected**
Positive perception of communication (scale with 5 variables)	1.03	0.07	0.99-1.07	
H5. Lower patient satisfaction is associated with lower enablement.				**Supported**
Positive patient satisfaction (scale with 7 variables)[a]	**0.54**	**<0.001**	**0.52-0.56**	
H6. A consultation for a long-standing condition is associated with lower enablement.				**Rejected**
Consultation reason: Illness (ref)				
Medical check-up	1.06	0.08	0.99-1.13	
Prescription, referral or certificate	**1.40**	**<0.001**	**1.31-1.51**	
Other	**1.20**	**<0.001**	**1.11-1.29**	

(Continues)

TABLE 5 (Continued)

Patient-level hypothesis	OR	p	95%CI	Conclusion for hypothesis
H7. Previous negative experience of health care is associated with lower enablement.				**Supported**
No previous experience of discrimination (scale with 4 variables)[a]	**0.96**	**0.002**	**0.93-0.98**	
H8. Lower trust in the doctor is associated with lower enablement.				**Supported**
Trust in doctors in general: Agree (ref)				
Disagree	**1.58**	**<0.001**	**1.41-1.77**	
H9. Lower propensity to seek care from a GP is associated with lower enablement				**Supported**
Propensity to seek care (severe complains, scale)[a]	**0.86**	**<0.001**	**0.83-0.88**	
Propensity to seek care (minor complains, scale)[a]	**0.89**	**<0.001**	**0.86-0.91**	
H10. Weaker continuity of care is associated with lower enablement.				**Supported**
Continuity of care (scale with 3 variables)[a]	**0.70**	**<0.001**	**0.67-0.73**	
H11. Weaker access to care is associated with lower enablement				**Supported**
Positive perceptions of access to care (scale variable with 5 variables)[a]	**0.84**	**<0.001**	**0.81-0.87**	
GP-level hypotheses				
H12. GP's age and gender are not associated with enablement.				**Supported**
GP's age: 21-39 (ref)				
40-64	1.05	0.29	0.96-1.15	
65 and over	1.09	0.32	0.92-1.28	
GP gender: Male (ref)				
Female	0.98	0.53	0.92-1.05	
H13a. GP's practice location is associated with enablement.				**Supported**
GP practice location: Large inner city (ref)				
Suburbs or small town	1.08	0.07	0.99-1.17	
Urban-rural or rural	**1.12**	**0.01**	**1.03-1.22**	
H13b. GPs' practice accommodation (duo or group practice) and remuneration (salaried GPs) are associated with lower enablement				**Rejected**
GP accommodation: Solo practice (ref)				
Duo or group practice	0.98	0.58	0.91-1.06	
GP remuneration: Salaried (ref)				
Self-employed	1.11	0.08	0.99-1.24	
Mixed	0.92	0.63	0.64-1.30	
H14. GP's perception of high workload or work-related stress is associated with lower enablement.				**Rejected**
GP-perceived work-related stress: Agree				
Disagree	1.03	0.43	0.96-1.10	
GP-perceived effort-reward imbalance: Agree				
Disagree	1.00	1.00	0.93-1.07	
H15. Shorter consultation time is associated with lower enablement				**Rejected**
Mean consultation time (GP estimation): 0-4 min (ref)				
5-9 min	0.82	0.21	0.60-1.11	
10-14 min	0.82	0.19	0.60-1.11	
15-29 min	0.76	0.09	0.56-1.04	
Over 30 min	0.71	0.05	0.50-1.01	

(Continues)

TABLE 5 (Continued)

Patient-level hypothesis	OR	p	95%CI	Conclusion for hypothesis
Mean number of face-to-face consultations per day (GP estimation): 0-14 (ref)				
15-29	0.91	0.19	0.80-1.04	
30-44	0.91	0.18	0.78-1.05	
45 or more	**0.82**	**0.02**	**0.70-0.97**	
H16. A lack of opportunities for GPs to collaborate with other providers or perform technical procedures is associated with lower enablement.				Rejected
Collaboration with other providers (scale)[a]	1.02	0.38	0.98-1.06	
Occupational skill mix in workplace (scale)[a]	0.96	0.25	0.88-1.03	
Possibility to perform technical procedures (scale)[a]	1.00	0.98	0.95-10.6	
Country-level hypotheses *Note: Country-level variables were included in the model one by one*				
H17. Weaker primary health-care structure is associated with lower enablement.				Rejected
PHC structure—PHAMEU variables				
Governance	1.02	0.78	0.87-1.19	
Economic condition	1.09	0.28	0.93-1.28	
Workforce development	0.96	0.66	0.80-1.15	
Total structure	1.02	0.81	0.86-1.20	
H18. Enablement is lower in non-gatekeeping countries.				Rejected
Gatekeeping (referred to non-gatekeeping countries)	1.46	0.15	0.92-1.80	
H19. Patient values are associated with enablement: enablement is lower in countries with less emphasis on patient enablement.				Rejected
'It is important that I can cope better after the appointment'	0.87	0.13	0.73-1.04	
'It is important that the doctor treats me as a person and not just a medical problem'	1.04	0.68	0.86-1.26	
'It is important that this doctor knows important information about my medical background'	0.93	0.39	0.77-1.10	
H20. Cultural dimensions are associated with enablement: larger power distance and more emphasis on individual values are associated with lower enablement.				General hypothesis supported
Power distance	0.88	0.14	0.75-1.04	Rejected
Individualism vs. collectivism	**1.21**	**0.03**	**1.02-1.43**	Rejected
Masculinity vs. femininity	0.87	0.08	0.72-1.02	
Uncertainty avoidance	**0.84**	**0.03**	**0.72-0.99**	
Long-term vs. short-term orientation	**1.26**	**0.003**	**1.08-1.46**	
Indulgence vs. restraint	0.98	0.81	0.82-1.16	
The ORs of the three best variance explaining variables in the final model, all patient and GP variables included				
Individualism vs. collectivism (towards individualism)	1.11	0.26	0.93-1.32	
Uncertainty avoidance (towards uncertainty avoiding)	0.88	0.15	0.74-1.04	
Long-term orientation (towards short-term orientation)	**1.27**	**<0.001**	**1.11-1.46**	

Note: Statistically significant ORs are bolded.

[a] Scale variables are presented as *z*-scores.

quality but also as an important issue in itself. Recognizing factors that associate with lower enablement—for example patients' lower self-perceived health—may help doctors to focus on the patients who may need more attention or actions in order to achieve enablement. Practising skills related to patient-centred consultation and patient involvement, as well as improving continuity and access to care, may contribute to better patient enablement across countries.

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CONFLICT OF INTEREST

None.

ETHICAL APPROVAL AND CONSENT TO PARTICIPATE

Ethical approval was acquired in accordance with the legal requirements in each country. Both GP and patient surveys were carried out anonymously. Although a standardized data collection procedure across all countries was strongly recommended and strived for, in the actual data collection strategy cultural and ethical requirements for each country were taken into account.

DATA AVAILABILITY STATEMENT

The data are available upon reasonable request, via the corresponding author.

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SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section.

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