

BMJ Open Behavioural intentions towards use of digital video consultations in primary care: a survey study on physicians', nurses' and psychologists' perceptions in Swedish primary care

Karl Maack ¹, Fredric Karlsson ^{2,3}, Nanna Gillberg,⁴ Ewa Wikström ⁴, Miriam Pikkemaat ^{2,3}, Veronica Milos Nymberg ^{2,3}

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For numbered affiliations see end of article.

Correspondence to

Karl Maack; karl.maack@gu.se

ABSTRACT

Objectives The study aimed to describe the experiences of physicians, nurses and psychologists employed in primary care in using digital video consultations. The second objective was to study the association between the predictors of behaviour and behavioural intentions to use digital consultations and to relate underlying behavioural beliefs to experiences of digital consultations in primary care. Overall, the research questions focused on the association between previous training, profession or theory-based behavioural predictors and behavioural intentions to use digital video consultations.

Design A web survey based on the theory of planned behaviour was sent to primary care professionals in western Sweden who had implemented digital video consultations. The questionnaire contained both closed and open-ended questions focusing on theory-based predictors of behavioural intentions, such as attitudes, subjective norms and perceived behavioural control. Data were analysed with a mixed-methods approach using quantitative and qualitative analyses.

Participants The questionnaire was distributed between June and October 2022 to 140 primary healthcare centres in western Sweden, of which 47 agreed to participate. Overall, the questionnaire was sent out to 969 clinicians, representing physicians, nurses and psychologists.

Results Physicians and nurses had lower experience and less positive attitudes towards digital video consultations compared with psychologists. No statistically significant differences were seen among the groups in behavioural intentions to use digital video consultations. The regression analysis showed that attitude was the strongest predictor of behavioural intentions among primary care physicians, while attitude and perceived behavioural control were associated with behavioural intentions among nurses. No associations between predictors and intentions were found among psychologists.

Conclusions The medical professionals reported high behavioural intentions to use digital video consultation despite different levels of experience. Attitude and perceived behavioural control were predictors of behavioural intentions among physicians and nurses,

STRENGTHS AND LIMITATIONS OF THIS STUDY

- ⇒ The study used both quantitative and qualitative data analyses, which is a strength of the study.
- ⇒ Including physicians, nurses and psychologists from both urban and rural areas provided a rich data material, generating results with high generalisability.
- ⇒ The low response rate is a limitation of the study, partially explained by strained personnel due to the ongoing COVID-19 pandemic during the data collection and the large number of questions included in the questionnaire.

indicating that future implementation should consider the professions' participation in the process.

INTRODUCTION

Background

Primary healthcare is experiencing high pressure related to increasing demand for accessibility from the public due to rapid technological development in the industry and an increasing elderly population, not the least in developed countries^{1 2} and in times of global pandemics.³ Innovation has been a driver of digital transformation in primary care, and several new solutions are being implemented, including video consultations via the internet,⁴ digital solutions for mobile self-monitoring,⁵ electronic records with direct patient access,⁶ medication reminders⁷ and patient management platforms.^{8 9} The influx of new technologies into primary care has changed the work environment of physicians, nurses and psychologists and has required them to continuously adapt to new ways of working, resulting in increased stress.^{10 11}

Electronic health (eHealth) is the delivery of healthcare by means of information and communication technologies,¹² and covers

telemedicine (such as digital video consultations), telehealth to provide remote health assessments and therapeutic interventions, and mobile health (mHealth).¹³ eHealth is expected to provide opportunities for people to achieve equal access to good health and welfare services, increasing the possibility of developing and strengthening their own resources for better independence and participation in the society.¹⁴ Telemedicine has been defined as the use of telecommunication to provide remote health assessments and therapeutic interventions.¹³ This includes digital video consultation, which is the focus of this study, but also more asynchronous services such as communication through chat and short text messages on digital platforms. The increased use of eHealth, including digital consultations, has led to much discussion on the pros and cons of its use.¹⁵ While policymakers and organisations need to adapt to societal needs as well as to consider economic implications, it is not clear if this technology makes a difference to those who need care the most, a phenomenon described as the digital divide.¹⁶ The digital divide is characterised by inequalities in usage, access and outcomes related to, for example, sociodemographic, socioeconomic and infrastructural factors. This phenomenon puts pressure on organisations to understand the determinants contributing to this digital divide.¹⁶ This digital divide has required healthcare organisations to understand the determinants contributing to the divide.¹⁶ Some research has shown positive outcomes with digital consultations, especially in relation to accessibility and user confidence when addressing less severe health problems.¹⁷ Previous research has also described video consultations as being more beneficial when used in situations where the physician–patient relationship is already established and the individuals know each other, as well as in further optimising clinical workflow, focusing on a ‘one-problem approach’, which in the short run leads to effectiveness.¹⁸ Some disadvantages of digital consultations that have been described include overconsumption of healthcare due to increased general accessibility,¹⁵ as well as the negative impact on relational trust, potentially affecting quality of care and patient safety.¹⁸

The wider implementation of video consultations has also been studied in terms of spread, scale-up and longer-term sustainability of the implementation efforts. Even though terms have been used interchangeably in several studies, there seems to be consensus on the lack of evidence base regarding its widespread implementation.¹⁹ There are even discussions on changing general practices into care providers where remote meetings are the default way of delivering primary care.²⁰

The emergence of the COVID-19 pandemic in early 2020 increased the number of remote healthcare contacts both through digital video consultations and traditional telephone.³ It is unclear if this increased adoption of telemedicine services by healthcare professions is only due to restrictions to physical contact. Further follow-up studies are needed to understand if and how this trend will proceed after the pandemic.³

The increased adoption of digital video consultation raises questions about its implementation process and the underlying factors. The implementation and adoption of new technologies have been studied in several fields, many of which derived from Rogers theory of diffusion of innovation.²¹ To understand which factors influence the adoption of digital video consultations, previous studies have focused on thematic approaches to barriers in implementation. For example, previous findings relate to disrupted power relations, unintended effects of implementation (paradoxical outcomes) and the rise of potentially corrosive pessimistic subcultures towards digital health.²² Further studies have also identified influential factors such as lack of financial and political support, consultation time constraints and difficulty managing competing day-to-day demands.²³

Since implementation of eHealth services, such as video consultations, influences and involves several healthcare professions, we believe there is a need for further studies with a multiprofession perspective to provide new insights into the predictive factors for their use. Different professions face different obstacles and might have differing attitudes towards use of video consultations. To enable successful implementation, we believe it is important to understand the attitudes of professions that are affected. We have found previous studies about predictive factors from a single profession^{24–25} that have used the theory of planned behaviour (TPB) to study the underlying beliefs towards an intention to perform a certain behaviour.

Theory of planned behaviour

In relation to implementation of video consultation in primary care, the TPB provides a theory-driven approach to explain the predictive nature of the different beliefs of physicians, nurses and psychologists with regard to behavioural intentions to use video consultation. Many theories have been used to describe healthcare staff’s adoption of technologies.^{26–27} For example, the normalisation process theory has been used as a framework to study the mechanisms of implementation through constructs relating to the individuals involved, such as coherence building, cognitive participation, collective action and reflexive monitoring.²⁸ We chose the TPB in relation to our aim to gain a better understanding of the implementation of telemedicine by describing experiences in using digital video consultations. We believe that it is a particularly useful theoretical lens to study the association between predictors of behaviour and behavioural intentions of different professions to use digital video consultations. We also made the pragmatic choice of using the TPB as we had access to a previously validated TPB-based questionnaire in the Swedish primary care context.²⁴

The TPB was developed by Icek Ajzen and proposes that the intention to perform a specific behaviour is influenced by the attitude towards the behaviour, subjective norms and perceived behavioural control (PBC).²⁹ These three factors depend on different beliefs and function as

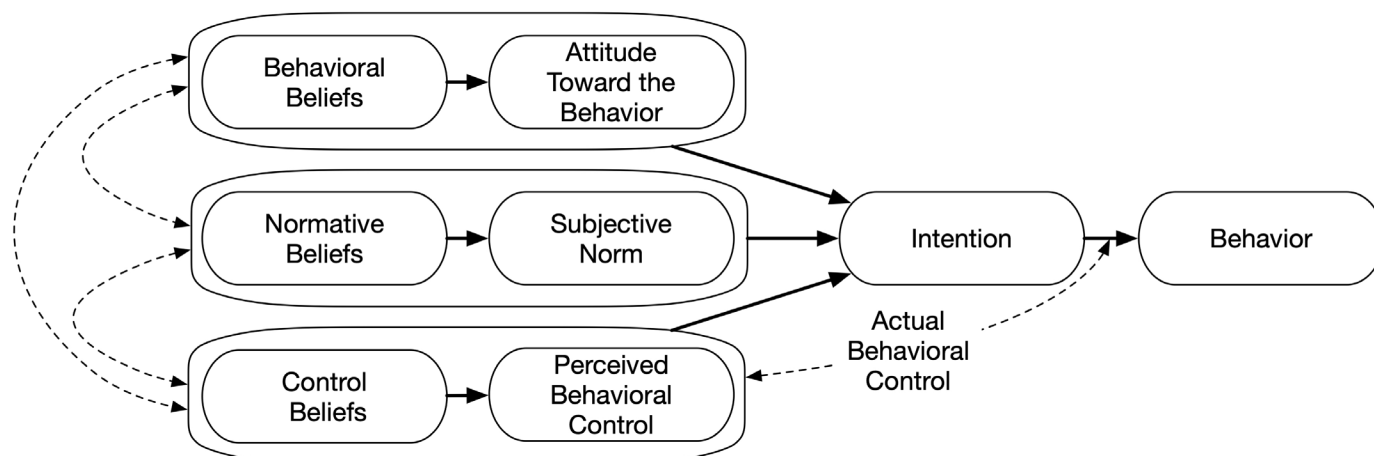


Figure 1 A representation of the constructs that make up the theory of planned behaviour as described by Icek Ajzen (1991).³⁷ The underlying beliefs that form attitudes towards the behaviour, the subjective norm in relation to performing the behaviour and the perceived behavioural control are all influencing the intention to perform the behaviour.

strong predictors of behavioural intentions and in turn predictors of behaviour. The theory has been used in numerous studies on different subjects to link predictors to a certain behaviour.²⁹ The theory assumes that people are rational decision-makers who consider these factors before deciding whether to engage in a behaviour. An overview of the three factors and their underlying beliefs can be seen in [figure 1](#).

It has previously been suggested that a wider social framework could be considered when introducing new technologies. The effects of eHealth on roles and responsibilities as well as on the ways to engage with professionals have been given little attention.³⁰ To better link behavioural factors to implementation, the TPB could contribute by establishing which factors are predictive from a multiprofessional perspective.

Experiences and attitudes from a multiprofession perspective on implementation

With the notion that the implementation process and the adoption of new ways of working in a complex healthcare organisation involve several different actors, a multi-agent perspective on implementation has the potential to contribute additional insights.³⁰ It is of interest to view each profession separately since several professions constitute a very active part in the triage and consultations in primary care and because the beliefs that lead to behavioural intentions might differ. Different clinical professions deal with different consultation challenges and are regulated accordingly, and are educated and professionally related to specific traditions and cultures. Therefore, it is of interest to better understand the differences and similarities in attitudes and experiences in digital consultations and eHealth services of each professional faction to gain a better understanding of the challenges and facilitators of implementation.

It has been noted that more studies are needed to understand the factors that inhibit or promote participation of professionals in implementation processes

and how new services affect clinical routines as well as their roles and responsibilities in everyday practice.³⁰ For example, according to the normalisation process theory, this is done when actors seek to translate their strategic intentions into ensembles of beliefs, behaviours, artefacts and practices that create change in others' everyday practices.³¹

Another change promoted by the increasing digitalisation in healthcare and that has been highly debated is the disruption of the traditional patient-provider power balance, discussed in concepts such as 'co-care' and 'expert patient knowledge'.³² There seem to be few studies that have addressed and discussed this on an empirical base of multiple professions and we believe such an analysis to have the potential to contribute to the literature on implementation of eHealth services.

The experiences and attitudes of primary care physicians towards digital video consultations and eHealth services have been empirically studied, with results showing that the major concerns are related to the clinical usefulness of the service being implemented.^{24 33} Indications show that the perception is that the patient-clinician relationship is altered and that it is important to address how to retain personal contact.^{15 24} The scope of this study is limited to digital video consultations.

Aims of this study

The aim of this study was to gain a better understanding of the implementation of telemedicine by describing the experiences of primary care physicians, nurses and psychologists employed in primary care in their use of digital video consultations. The second aim was to study the association between the predictors of behaviour and behavioural intentions of different professions to use digital video consultations and to relate underlying behavioural beliefs to experiences of digital video consultations in primary care.

METHODS

Study design and setting

This study was based on empirical data obtained from a web survey questionnaire that was based on the TPB.²⁵ Focusing on behavioural intentions and their correlation with experiences and personal characteristics, the study design complement quantitative survey data with analysis of qualitative survey data which complemented with narrative insights in the same setting and timeframe. Further, the overall balance between the quantitative and qualitative approaches in this study is evenly distributed, with an equal distribution of participating researchers with their respective major background in quantitative and qualitative studies. The quantitative analysis was based on closed questions focusing on behavioural intentions. The qualitative thematic content analysis was based on free-text answers to open-ended questions. Empirical data were gathered from multiple professions at primary healthcare centres (PHCCs).

The study was performed in the Swedish healthcare setting. Healthcare in Sweden is based on the Beveridge funding model and is funded and governed at the local level through income taxation in 21 counties (regions), as well as 290 municipalities, although the overall statutory framework is decided nationally through the National Board of Health and Welfare.³⁴ Therefore, the healthcare system is to a high degree decentralised, which means that it is managed and run either by the regions, the local authorities or the municipalities. The western area of Sweden is mainly represented by Region Västra Götaland (VGR) with its 49 municipalities and 1.7 million inhabitants. Even though healthcare services are publicly funded in Sweden, they can be carried out by both public and private providers.³⁵ It is up to each provider to choose a digital system, and this leads to a multitude of different systems being implemented at the same time by different providers. The overlap of systems is challenging, and one major problem is lack of interoperability. Some digital systems are nationally provided though, for example, systems for medical sick leave certificates and drug prescriptions. The overall principle is that any system can be used if it fulfils the existing regulations.³⁶

Questionnaire design

This study used the 'Physician Attitudes and Intention to use Telemedicine' (PAIT) questionnaire, which is based on Ajzen's TPB.³⁷ The PAIT questionnaire was developed as an instrument to study the attitudes, subjective norms and PBC of primary care physicians. The questionnaire has been validated, tested and used in a previous study on general practitioners in southern Sweden, which has been published both in a quantitative paper covering the primary questionnaire²⁵ and in a qualitative paper that explored the open-ended questions.²⁴ The survey questionnaire has been tested for construct validity and reliability. Internal validity was psychometrically tested by a group of five physicians with proficiency in telemedicine and digital tools, evaluating if it the questionnaire

captures the research question. They made written notes on paper questionnaires regarding leading or confusing questions. The comments of the expert group led to minor changes in wording and formatting. A pilot study was then performed at two PHCCs by sending the questionnaire to 24 physicians. Internal consistency of the items, along with several subitems, was tested with Cronbach's α (CA). For items with low CA, the subitems were removed to improve the CA. After modification, the remaining items had a CA between 0.6 and 0.95. The pilot also included the open-ended questions, which were evaluated by the researchers.

The questionnaire has been used to study the general experiences of telemedicine, as well as the predictors of behaviours (attitudes, subjective norms, PBC and behavioural intentions) of primary care physicians, focusing on three domains: digital contacts, chronic disease monitoring with digital tools and use of artificial intelligence.²⁴ The survey consisted of a questionnaire with both closed and open-ended questions connected to the three domains. In this study, we focus particularly on the first domain, that is, digital contacts, with a specific focus on digital video consultation.

The closed questions covered items assessed on a 7-point Likert scale, with the addition of an alternative option 'I don't know'. The primary outcome measures were the scores on the intention to use digital contacts as predictors of behaviour. Examples of questionnaire items that are targeting the predictors of behaviour derived from the TPB are presented in online supplemental table 1. Specific experiences and personal backgrounds included clinical profession (primary care physician, nurse or psychologist), previous training in eHealth (>4 hours), participation in Närhälsan Online (a large public eHealth programme), employment in private or public health centre, number of years employed in primary care, as well as age and sex. The open-ended questions were connected to the domains covered in the quantitative questions and provided an opportunity for participants to clarify and give further indepth accounts of their thoughts and experiences.

Participant recruitment

The study participants were recruited in 2022 from both public and private PHCCs in western Sweden (VGR) and represented physicians, nurses and psychologists. All participation was voluntary and no incentives were offered. The recruitment process was managed in two ways, one in relation to private PHCCs and one to public PHCCs. The public PHCCs were coordinated in collaboration with the region's research and development office (VGR FoUU) and initiated through enquiries about study participation, opportunity for questions and the study population aimed for. With the coordination process, we were allowed to contact each PHCC's manager for approval within three areas of the region (areas V3, V8 and V9), representing the largest city as well as rural areas. Thereafter, a request for participation went out to each

PHCC's manager, who needed to approve participation of their clinical professionals. This step was necessary due to the heavy workload of the primary care professionals in the region, not the least due to the COVID-19 pandemic. Meanwhile, the private PHCCs could be contacted directly. Each contact was initiated through enquiries about study participation, opportunity for questions and the study population aimed for. All participants from both private and public PHCCs received information about the study via email, including a link for optional participation. Via the attached link, they were able to access the questionnaire, which was managed by the Swedish state-owned online survey service provided by SUNET (www.sunet.se/om-sunet). The study used only anonymous data and the participants were informed of the study's focus and scope, that participation was optional, the freedom to cancel or abort participation, and which organisation was responsible. Information was given before the participants could enter data in the questionnaire. Participants were not asked about their own health or other sensitive topics.

The questionnaire was distributed between June and October 2022, including two reminders. Of the 140 PHCCs, 47 agreed to participate. Overall, the questionnaire was sent out to 969 clinicians.

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Patient and public involvement

No patients and/or the public were involved in the design, or conduct, or reporting, or dissemination plans of this research. Only professions and specialist employed in healthcare were participants.

Quantitative data analysis

Descriptive statistics were used to describe the theoretical constructs of the TPB (experiences, attitudes, subjective norms, PBC and intentions) and the demographic data. Both the mean (with SD) and the median (with range) were presented in most cases. We used a previously validated questionnaire,²⁵ with several survey questions that cover the same behavioural predictors, and attempted to capture different aspects of the

predictor by formulating the question differently. A mean value was calculated for the predictor based on the answers. If more than half of the questions for one behavioural predictor were not answered, data were reported as missing.

All differences among the three professional groups were tested with analysis of variance for normally distributed data, Kruskal-Wallis for not normally distributed data and χ^2 for categorical data. Multivariable linear regression was used to study the association between the predictors and behavioural intentions to use digital video consultations. Unstandardised beta values, p values and the 95% CIs of unstandardised beta values were calculated for each predictor. An adjusted R^2 was calculated for each model to show much of the variance the model explained. First, an unadjusted analysis was performed where the score for the behavioural intention was the dependent variable, while the scores for attitudes, subjective norms and PBC were the independent variables. A fully adjusted analysis was then performed, with adjustments for 'age', 'year of experience', 'sex', 'workplace (public or private)', 'education eHealth', 'experience Närhälsan Online' and 'need for more information'. In this study, 95% confidence level and the results with a p value equal to or less than 0.05 were considered statistically significant. IBM SPSS V.28.0 was used for all data analyses.

Qualitative data analysis

Each written response to open questions about digital video consultations was analysed to find meaningful units related to the three underlying beliefs of behavioural intention—attitude, subjective norm and PBC—through the process outlined in [figure 2](#).

Each of the three underlying beliefs has been analysed separately by condensation and categorisation of responses to the questionnaire. Based on the categorised and condensed meaningful units of the empirical data, we found several underlying beliefs related to behavioural intention of primary care physicians, nurses and psychologists to use digital video consultation in primary health-care. Examples and the underlying meaning that were found are shown in [table 1](#).

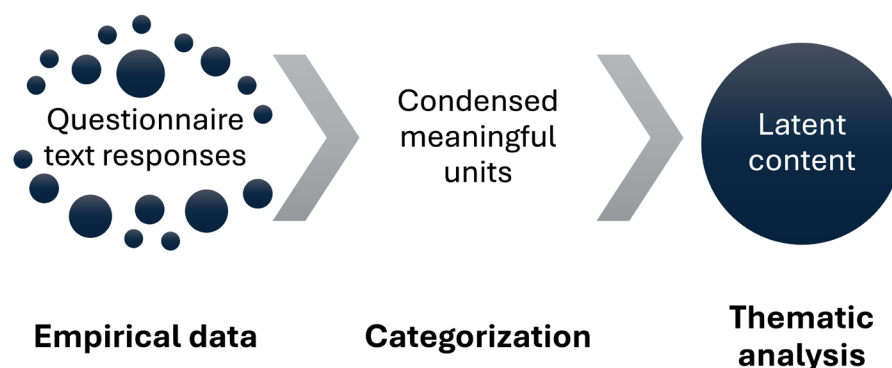


Figure 2 An overview of the modified content analysis method.

Table 1 Examples of the condensation step in the thematic analysis of empirical data

Questionnaire text response	Meaningful unit and condensation	Underlying meaning
Video calls are challenging as they raise nursing questions to the doctor level.	Nursing issues are raised to the physician level.	The implementation creates a normative shift in professional division of work (resource allocation).
Difficult with security. You may have to sweep around the room so the patient knows that no one else is present and the patient needs to understand that they need to be in a quiet environment.	Patients need to understand that the consultation environment is important.	The implementation shifts clinicians' control of suitable consultation environment, which puts higher responsibility to patients.

Each row in the table exemplifies the process for a questionnaire text response from left to right. The questionnaire's text responses were first analysed to find meaningful units, which were then categorised in relation to their underlying meaning.

The questionnaire has open questions that generated qualitative empirical data in the form of written answers. Open questions included the following: 'Do you have any free comments about the use of digital contacts?' 'Do you have any comments on the use of digital contacts such as video consultations?' 'Do you have any other comments?' 'If you used video consultations, how do you think the consultation environment affects the meeting with the patient compared to a regular physical meeting (positive and/or negative comments)?' 'What do you think are the biggest challenges in using video calls for patient meetings in primary care?'

The process of gaining new thematic insights was derived from a qualitative content analysis method slightly altered from that of Graneheim and Lundman.³⁸ As the amount of qualitative data from a survey is not as rich as from interview studies, we chose to limit the number of steps in the analysis and went directly from text condensation to categorisation without coding. After a brief familiarisation with the data, meaningful units were drawn from text answers through condensation, followed by categorisation and then thematic analysis, as shown in [figure 2](#).

Since the empirical data were made up mostly of very short open answers from each respondent, the actual coding step was seen as not contributing much and thus we simplified the analysis by instead categorising the condensed meaningful units directly and skipped further condensing into codes. Through this, we achieved an effective balance between gaining a clear overview of the data and sustaining enough meaning to preserve latent content in the text. Finally, we interpreted the content of the categories through a process that aims to draw out latent content (underlying meaning). Through this process, we were able to discuss the different themes that were emerging and the insights related to the different underlying beliefs that were analysed as predictors in the quantitative analysis.

All data were collected through the Swedish state-owned online survey service provided by SUNET, where all data were stored in text format. The questionnaire data were then managed in Excel to calculate the overall characteristics of the participants and to perform content analysis, as described earlier.

RESULTS

Results of the quantitative analysis

Characteristics of the respondents

154 participants returned complete questionnaires, of which 105 included at least one free-text comment, with a response rate of 16%. Responses that did not specify a profession (n=12) were excluded from further analysis. The characteristics of all the respondents, by professional group, are summarised in [table 2](#).

There were statistically significant differences among the three professional groups in terms of all characteristics, except for 'years of experience'. Nurses (50.1) were generally older than physicians (43.7) and psychologists (44.0). Women (73.8%) constituted almost three-quarters of all the respondents, and majority of all three groups were female. Approximately two-thirds of the respondents worked in the public sector (67.1%); the group of psychologists was the only group where most respondents worked in the private sector (58.8%). Only 40.1% of the respondents had a minimum of 4 hours of eHealth training, whereas nurses had the lowest level of training (25.4%). Nurses indicated a higher need for more information about video-based tools than the other two groups.

Respondents' experiences of different eHealth services

All respondents had a high level of experience in physical visits with patients. Nurses had more experience in phone consultations with patients than the other groups. Physicians (2.5) and nurses (2.2) had relatively low experience in digital video consultations, while psychologists (4.0) indicated a higher level of experience. 22.3% of the respondents had experience with Närhälsan Online, with no significant differences among the groups. The experiences of all respondents and per professional group are summarised in online supplemental table 2.

Behavioural predictors

There were differences among the groups in attitudes towards digital video consultations. Psychologists scored highest (5.9), followed by nurses (5.2) and physicians (4.3). No statistically significant differences were seen among the groups in terms of subjective norms, PBC

Table 2 Baseline characteristics of the respondents who provided responses to the questions used in the quantitative analysis

	All (N=142)	Physician (n=58)	Nurse (n=67)	Psychologist (n=17)	Statistical test (among the three groups)
Age					
Mean (SD)	46.7 (11.0)	43.7 (11.6)	50.1 (9.6)	44.0 (10.9)	Kruskal-Wallis (p<0.01)
Median (range)	46 (25–71)	41 (28–71)	50 (25–67)	43 (28–63)	
Missing, n	5	2	2	1	
Years of experience*					
Mean (SD)	10.0 (8.8)	12.2 (9.8)	8.7 (7.6)	8.6 (8.7)	Kruskal-Wallis (p=0.07)
Median (range)	8 (0–38)	10 (0–38)	6 (0–36)	5.5 (1–30)	
Missing, n	3	2	0	1	
Sex					
Men, %	26.2	58.6	1.5	11.8	χ^2 (p<0.01)
Women, %	73.8	41.4	98.5	88.2	
Undeclared, %	0.0	0.0	0.0	0.0	
Missing, n	1	0	1	0	
Workplace					
Public, %	67.1	66.7	74.2	41.2	χ^2 (p=0.04)
Private, %	32.9	33.3	25.8	58.8	
Missing, n	2	1	1	0	
Education on electronic health					
Yes, %	40.1	51.7	25.4	58.8	χ^2 (p<0.01)
No, %	59.9	48.3	74.6	41.2	
Missing, n	0	0	0	0	
Need more information on video consultation.					
Mean (SD)	4.1 (2.4)	3.3 (2.2)	5.1 (2.2)	2.7 (1.9)	Kruskal-Wallis (p<0.01)
Median (range)	4 (1–7)	3 (1–7)	6 (1–7)	2 (1–6)	
Missing, n	11	7	3	1	
*One record of 1997 years of experience were set to NULL.					

*One record of 1997 years of experience were set to NULL.

or behavioural intentions. The behavioural predictors and intentions to use digital video consultations are summarised in [table 3](#).

Regression analysis

A crude regression model was initially performed with behavioural intentions as dependent variables and with attitudes, subjective norms and PBC as independent variables. The model was later adjusted for clinical profession (primary care physicians, nurses or psychologists), previous training in eHealth (>4 hours), participation in Närhälsan Online (a large public eHealth programme), employment in private or public health centre, number of years employed in primary care, as well as age and sex. Attitude and PBC were the two predictors associated with behavioural intentions in both the unadjusted ($R^2=0.42$) and adjusted ($R^2=0.50$) analyses for all respondents. In the subgroup analysis of different professions, attitude was the only predictor associated with behavioural intentions for primary care physicians in both the unadjusted

($R^2=0.55$) and adjusted ($R^2=0.68$) analyses (beta=0.98, $p<0.01$ vs beta=1.25, $p<0.01$). PBC (beta=0.64, $p<0.01$) was associated with behavioural intentions in the unadjusted analysis ($R^2=0.26$) for nurses, while attitude (beta=0.81, $p<0.01$) and PBC (beta=0.70, $p<0.01$) were associated with intentions in the adjusted analysis ($R^2=0.48$). No statistically significant predictors were identified for the psychologists when performing unadjusted and adjusted analyses. The multivariate regression analysis for all respondents and for each professional group are summarised in online supplemental table 3.

Results of the qualitative analysis

In this section we will present the major results from the thematic content analysis of the empirical data gathered from the open-ended questions. The characteristics of the respondents who submitted free-text comments are summarised in online supplemental table 4. For further reference on the condensed and categorised meaningful units, we have provided the findings in online

Table 3 Descriptive statistics of behavioural predictors and intentions towards video consultation and group comparison analysis

	All (N=142)	Physician (n=58)	Nurse (n=67)	Psychologist (n=17)	Statistical test (among the three groups)
Attitudes					
Mean (SD)	4.9 (1.2)	4.3 (1.2)	5.2 (0.9)	5.9 (1.0)	Kruskal-Wallis (p<0.01)
Median (range)	5¼ (1–7)	4¼ (1–7)	5½ (3–7)	6 (4–7)	
Missing, n	19	6	13	0	
Subjective norms					
Mean (SD)	3.7 (1.8)	4.0 (1.8)	3.5 (1.9)	3.6 (1.8)	Kruskal-Wallis (p=0.43)
Median (range)	4 (1–7)	4 (1–7)	4 (1–7)	4 (1–7)	
Missing, n	3	1	2	0	
PBC					
Mean (SD)	4.4 (1.3)	4.3 (1.3)	4.4 (1.4)	4.6 (1.1)	Kruskal-Wallis (p=0.82)
Median (range)	4½ (1–7)	4 ⅓ (1–7)	4½ (1–6 1/3)	4½ (2½–6 1/3)	
Missing, n	15	3	11	1	
Intentions					
Mean (SD)	5.3 (1.8)	5.0 (1.9)	5.4 (1.8)	6.0 (1.7)	Kruskal-Wallis (p=0.09)
Median (range)	6 (1–7)	5½ (1–7)	6 (1–7)	7 (1–7)	
Missing, n	4	0	4	0	
PBC, perceived behavioural control.					

PBC, perceived behavioural control.

supplemental tables 5–7. Examples of the themes that emerged from the analysis are outlined in [table 4](#) and are presented in the following sections in relation to the underlying beliefs they relate to. A full table of the categories is provided in online supplemental table 8.

One of the most prominent beliefs shared among all professions regardless of whether they had any previous training in eHealth or experience of the specific public programme of Närhälsan Online was the challenge of using digital video consultations when meeting patients if there was no effective triage in place. This was clearly reflected in the attitude as well as in the absence of perceived control.

Themes derived from behavioural beliefs relating to attitude

Physicians stated positive attitudes towards digital video consultations being used to follow up or contact patients regarding test results from previous examinations. There was also a more positive attitude towards digital video consultations that were initiated by clinicians. Most responses were related to negative beliefs, where a reoccurring theme was ineffective or absent triage, which generated additional consultations and resource consumption. Another major concern was the lack of evidence on how the technology should or could be used. Negative attitudes also related to technical issues, often relating to low-quality internet connection on the side of the patient. Negative attitudes were also related to difficulties in performing a proper examination or missing important details that are often seen during physical examination. Further, there were reoccurring beliefs that

digital video consultations could lead to crowd-out effects for patients with more severe conditions, or secrecy and integrity problems. Primary care physicians did not seem to believe digital video consultations were effective in their work or that they have added value compared with telephone consultations. It was also mentioned that patients often had poor lighting, were unfocused, had poor technology and had poor sound.

Nurses experienced positive attitudes when digital video consultations were used for uncomplicated tasks. Digital video consultations were also mentioned as a good alternative in situations that otherwise lead to whole families travelling to a health centre. There were also varying beliefs regarding the actual time consumed and the effectiveness. Some expressed concerns about increased number of patient contacts. Another concern was the risk of not prioritising the patients with the highest care need or losing diagnostic nuances. There were also varying beliefs regarding user-friendliness, effects on working environment or difficulties of getting hold of specialists when needed.

Psychologists mentioned that sometimes digital video consultations could lead to better focus in consultations, shorter consultations and increased access, and that they were beneficial when physical consultations were not possible. They also mentioned that practice was important in developing good behaviour.

The more you practice video consultations, the better you become at developing behaviors that create ‘work-alliance’ (Swedish ‘arbets-allians’), so it’s

Table 4 Example overview of the themes identified, the categories they derive from, as well as the connection to attitudes (A), subjective norms (SN) and perceived behavioural control (PBC)

Theme	Categories	A	SN	PBC
Good for follow-up or less qualified tasks	Good when used for following up or contacting patients regarding test results from previous examinations.	X	X	
Lower quality examination and clinical judgement	Struggles of losing control of important information in the assessment, such as body language, as well as lack of opportunity for clinical observations normally done in the clinic room.	X	X	X
Not effective since there is no control of meeting environment	Loss of control of the meeting environment since the patient could lack or lose internet connection required in digital video consultation.	X		X
Low quality triage	Ineffective or absent triage, which generated additional consultations and resource consumption.	X		X
Bad work environment	Hard to share material in an easy way or to draw examples and fill in forms.	X	X	X
Crowd-out effects	Could lead to crowd-out effects for patients with more severe conditions, or secrecy and integrity problems.	X		X
Not evidence-driven	Driven by politicians without an evidence-based foundation or not involving clinical professionals.	X	X	X
Not patient-driven	Patients themselves did not express a need for digital video consultations and preferred telephone contacts if appropriate.		X	X
Need for more practice	Both patients and clinicians needed to break habits.	X	X	X
Leads to mistrust in healthcare	Nurses also raised concerns about older or not technologically competent patients mistrusting this way of communicating with healthcare.	X	X	X
Integrity and safety issues	Physical consultations were also seen as better prioritised by the clinicians because of the triage function. This assessment through triage is lost in digital video consultations since patients could book consultations themselves, which was perceived to reduce patient safety.	X		X
Shifting professional boundaries/identities	Norm of clinicians performing clinical decisions is shifting and technocrats are getting more involved in the decision-making processes.	X	X	
Profession's participation needed in the implementation process	Need to adapt implementation of new technology to the work model of different professions and that the norm had been to not involve clinical professionals in this process.		X	X
Access before medical need and equal care	Fears about a new emerging norm imposed by policymakers to not consider equal care as an important factor in the implementation of new technologies, not the least when resources were drained to serve simple consultations instead of treating more severe illness.		X	X
Potential niche effectiveness	Beneficial when physical consultations were not possible.	X		

something you need to practice. —Respondent 32, psychologist, with >4 hours of training

Negative attitudes were related to lower quality in clinical judgement, uncertain secrecy/integrity, poor technology, worsened work environment, multiple calendars for bookings and difficulties with sharing material in digital video consultations. They also mentioned that their attitudes were related to patients' attitudes.

Themes derived from normalising beliefs relating to subjective norms

Primary care physicians expressed normative beliefs regarding implementation of digital video consultations being driven by politicians without an evidence-based foundation or not involving clinical professionals. Some expressed a belief that the norm of clinicians performing clinical decisions is shifting and that technocrats are

getting more involved in the decision-making processes. They also expressed that the patients themselves did not express a need for digital video consultations and preferred telephone contacts if appropriate; however, both patients and clinicians needed to break habits. Managers were perceived as unreasonably motivated by popularity and easy access to healthcare rather than the norm of prioritising patients with the highest need. The professionals also expressed that the reimbursement model encouraged a certain number of digital video consultations regardless of quality or patient needs, indicating an inefficient use of resources. There were also concerns among physicians about a new norm of digital video consultations having its own intrinsic value. In addition to a poor triage system, physicians performed tasks for nurses, which in turn put a higher pressure on resource consumption and effective healthcare.

Nurses described an unmet need to adapt implementation of new technology to the work model of different professions and that the norm had been to not involve clinical professionals in the process. This probably encouraged beliefs that the new technology was not user-friendly, and at the same time clinical professionals also expressed the need for more training. Nurses also raised concerns about older or not technologically competent patients mistrusting this way of communicating with healthcare. Some expressed fears about a new emerging norm imposed by policymakers to not consider equal care as an important factor in the implementation of new technologies, not the least when resources were drained to serve simple consultations instead of treating more severe illness.

Psychologists expressed a new problematic norm they perceive to be caused by digital video consultations where patients no longer follow the standards of a meeting, such as being in a secure environment or having clothes on during digital video consultations.

It is difficult when the patient does not consider the 'meeting rules', for example, is sitting in an environment where confidentiality cannot be maintained, is not dressed, etc. —Respondent 95, psychologist, with >4 hours of training

Themes derived from control beliefs relating to perceived behavioural control

Primary care physicians described loss of emotional and body language input when assessing the seriousness of a patient's condition with digital video consultations. On the other hand, there is a high loss of audible and visual input with digital video consultations since the patient is filtered through a screen. Regardless of the equipment used at the health centre, technical hurdles such as poor lighting, unfocused visuals, poor technology and poor sound on the patient's side influenced the quality of the digital video consultation. This could lead to loss of important information that the clinician needs, as well as reduced medical safety, compared with physical visits. In digital video consultations, the clinician also loses control of the meeting environment since the patient could lack or lose internet connection required in digital video consultation. Physical consultations were also seen as better prioritised by the clinicians because of the triage function. With digital video consultations, this assessment through triage is lost since patients could book consultations themselves, which was perceived to reduce patient safety. The complementary ways in which patients could book themselves to meeting were also seen as a loss in control over patient flows. This was seen as a source of additional stress, as well as a potential risk for treatment delays or worsened patient continuity.

Primary care physicians also lose control in prioritising severe illnesses, ending up with providing simple self-care advice and performing medical assessments usually done by nurses or doing additional administrative tasks with

no clinical importance. They also expressed that digital video consultations could take resources from the elderly and more complex patients.

I strongly oppose the region's stated goal that 20% of patient visits should be digital. It is not possible to set such numbers, it should be the needs of the individual patient that decides. Compare it to saying '20% of politicians' decisions should be YES'. I oppose such detailed control of clinical work. —Respondent 16, medical doctor, without >4 hours of training

With the goal of 20% of consultations to be performed online being imposed by managerial regional decisions, the clinicians believed that healthcare no longer prioritises medical needs but focuses instead on increased accessibility to primary care. The perception was that implementation was neither patient-driven nor evidence-based.

Nurses expressed lack of control of where patients were when they contact healthcare, creating difficulties in the triage process. This could lead to suboptimal bookings and a high risk of delayed treatment, especially since patients could have difficulties in clearly formulating their inquiries when utilizing digital contact channels. Similar to physicians, nurses also expressed that technical problems, such as low connection quality, loss of a calm environment or background noise, caused loss of valuable time. Nurses also expressed concerns about lack of training regarding the implemented technology and the belief that digital communication decreased their control of delivering equal care.

The development of eHealth-services has been fast, but the training of personnel is not going as fast. We are expected to work in several systems that we do not have proper knowledge of, which is a shame as these would make our work much easier and save time and resources for both us and our patients. —Respondent 114, nurse, without >4 hours of training

Psychologists expressed struggles with losing control of important information during the assessment, such as body language, as well as the lack of opportunity for clinical observations normally done in the clinic room. This made it harder to get a good intimate and trusting contact with their patients and to establish the so-called 'patient-caregiver alliance', as well as with sharing materials in an easy way or to draw examples and fill in forms. It was also difficult to ensure the patient felt safe in their environment. They also described the risk that employers might consider that digital video consultations could substitute physical consultations for efficiency, which is perceived as wrong, as well as the challenge of reaching those patients with the highest need of care.

Very good supplement when it is difficult to get a physical visit BUT cannot replace physical visits and I am very worried that the employer thinks that video is equivalent to physical visits and thus tries to replace physical with video for increased efficiency.

—Respondent 6, psychologist, without >4 hours of training

Psychologists also experienced work environment issues as they had no control over which calendar patients were booked into due to multiple overlapping systems on the screen.

DISCUSSION

Principal results

Our results showed differences in the attitude towards digital video consultations among the medical professional groups. Attitude was the only predictor associated with behavioural intentions among primary care physicians, while attitude and PBC were associated with behavioural intentions among nurses. No predictors were associated with behavioural intentions among psychologists.

There were more nurses and physicians working at public PHCC than psychologists. Despite no differences in years of clinical experience, nurses and physicians reported a greater need for support and training in the use of telemedicine. These findings might explain the differences in behavioural intentions and predictors of intentions among the groups. Given the increasing use of telemedicine at both public and private PHCCs, our findings suggest that public healthcare should focus more on medical staff's training in using telemedicine. Physicians and nurses had relatively low experience in digital video consultations, while psychologists indicated a higher level of experience. We believe that this difference is especially interesting in relation to the predictive factor of eHealth education towards behavioural intention in the group of psychologists.

Based on the results of this study, we suggest that additional training be considered when implementing these services. Only 40.1% of the respondents had a minimum of 4 hours of eHealth training, whereas nurses had the lowest level of training. Nurses also indicated a higher need for more information about video-based tools than the other two groups.

From the content analysis, we saw supporting themes, such as emphasis on practice expressed by psychologists and the need for more training expressed by nurses. The respondents expressed a high need for further information about eHealth and that rapid implementation seemed to have been lacking in preparing clinical professionals with training. This result was found especially among nurses, where only a quarter of the respondents had any training of 4 hours or more. Since we saw no significant differences between clinicians who had experience in Närhälsan Online, we could not draw any conclusions based on the regional programme's effects on behavioural intention, attitude, PBC or subjective norm towards digital video consultations.

Comparison with prior work

Our results showed that attitude and PBC were the strongest predictors associated with behavioural intention, which aligns well with the results of a previous study based on empirical data gathered in 2019.²⁵ Further previous studies in other settings have indicated that behavioural intention to use video consultations was positively influenced by the attitude towards use of video consultation and that perceived usefulness is the primary driver of a positive attitude towards use of video consultations.²⁷

The results of the thematic analysis are similar to the findings of previous studies. A reoccurring theme we found was the risk of the digital video consultations having a crowd-out effect on some patient groups, which aligns with the research on digital divide.¹⁶ There are also studies showing that younger age, higher educational attainment, higher income and being born in Sweden were associated with higher probability of using digital care. In contrast, the main determinants of using face-to-face visits were higher age, lower educational background and being born outside of Sweden.³⁹

In the content analysis, the elderly population was one group that was affected by a crowd-out, with the main factors being the ability and capability to use technology as well as common multimorbidity within the group. Previous studies have also addressed barriers and facilitators of eHealth solutions among the elder population as well as factors that could facilitate the adoption of digital care.^{22 40 41}

The lack of a well-functioning triage was seen as a problem by all professions included in the study. One major problem was the low control of which patients end up in a physical consultation and which end up in a digital video consultation. This issue has been discussed in previous research and suggestions have been made on the clinical and patient factors as well as the provider factors to consider when choosing between physical and video consultation.⁴² In this study, it was emphasised that the loss of traditional testing capabilities with video consultations compared with physical consultations has led to physicians requesting a pre-test before consultations to lower the risk of digital video consultation bookings, generating additional consultations.

Unlike the other professions, psychologists mentioned that the digital video consultation in their field seemed to work better for patients who actively chose digital video consultations and worse when it was initiated by a caregiver. This observation might be explained by the nature of psychiatric complaints, which often include difficulties with socialising. However, further research is needed.

One recurring observation was the concern about the actual patient room where digital video consultations were being held. This was mainly expressed as a consequence of the patient attending digital video conference consultations from anywhere, with no regard for personal integrity when discussing personal health issues. Another concern is the lack of basic meeting ethics, such as having clothes on during the digital video consultation.

Since patients actually gain higher control of consultation conditions, this could be added to the discussion of shifting power position between the patient and the provider, as discussed by Øvretveit.³²

Psychologists described a lack of control on the working environment, which might be related to their notion that clinicians are not part of the implementation process. These findings differ from other research on the implementation of a digital work platform in Sweden and the effect on healthcare professionals' working conditions,⁴³ but at the same time confer previous findings on resource restrictions and the unpredictability of their work.¹⁰ This discrepancy highlights the importance of the management's approach, with the inclusion of the medical professionals in the implementation process as an important factor in adopting new technology.

A shared concern between professions was that the implementation rationale were perceived as driven from a perspective that did not focus on clinical quality, but rather an perspective that only focused on access to healthcare in which the prioritisation of patient needs was disregarded. Clinicians described difficulties in accepting the goal of 20% of all consultations being held online, as forced by politicians, since no evidence base for these political decisions had been presented. These beliefs might increase concerns about the crowd-out effects mentioned above and adds worry to the debate about the growing digital divide.¹⁶ Recent studies have shown that healthcare consumption increased, with more follow-up visits, when the number of remote consultations increased.^{3 44} Therefore, questions can be raised regarding the political push towards more online services since the evidence seems to point to the opposite direction.

Respondents also pointed out work environment-related problems such as allocating tasks between professions, for example, when a physician is expected to assess a patient in ways usually handled by a nurse. The added workload on the administrative side can also be seen as a challenge that leads to less effective healthcare and also puts higher pressure on the work environment, as previously discussed by Fernemark *et al.*⁴⁵ as well as that the administrative work was time consuming and less motivating and took away the physicians desired focus on caring for the patient.¹⁰

Strengths and limitations

The most important strength of this study is its contribution to the research on the predictive factors of intention and behaviour to use eHealth services and digital video conferencing within primary care by using multi-profession perspectives. Another strength is combining in the same questionnaire a quantitative analysis based on the TPB and a qualitative content analysis based on open-ended questions. Also, where previous studies used empirical data gathered before COVID-19 pandemic, our data were collected in the later stage of the pandemic, contributing additional perspectives from primary care which had gradually adapted to a wider implementation

of eHealth solutions, especially digital video consultations. Another strength of the study is the inclusion of physicians, nurses and psychologists from both urban and rural areas in a large Swedish area, providing a rich data material and generating results with high generalisability.

A major limitation is the low response rate of 16% out of a potential 969 primary care physicians, nurses and psychologists that we could include and send the questionnaire to. After survey reminders, the managers of PHCCs communicated to the researchers that clinicians had difficulties with prioritising research participation due to the high workload during the COVID-19 pandemic. This could also explain, to some extent, the low response rate. Another limitation is the difficulty with accurately calculating the response rate due to lack of information about the exact number of healthcare workers at each PHCC. The response rate was even lower for open-ended questions, with 105 free-text answers returned. The data were, however, considered sufficient to perform thematic content analysis, even if the limited amount of wording in some cases might have been a limitation. Another limitation, particularly to the qualitative analysis, was the rather low number of responses from the psychologists, where only 13 responded.

CONCLUSION

This paper explored the behavioural intentions to use digital video consultations from a multiprofession perspective through a theory-based survey sent to physicians, nurses and psychologists. Attitude and PBC were the predictors of behavioural intentions among physicians and nurses, indicating that future implementation should consider the professions' participation in the process. Investing in professional training in eHealth services such as digital video consultations could be specifically important for a successful implementation. As this study suggests, the medical staff's overall perception was that access to healthcare is prioritised over medical need or equal care and that implementation is seen as neither driven by evidence or by patient needs. With low quality or absent triage, crowd-out effects, as well as integrity and safety issues, there was worry that the implementation of the video consultation programme would lead to mistrust in healthcare. At the same time, particular areas where video consultations could be effective were suggested, especially with follow-up or tasks that did not require quality examination or clinical judgement. Several challenges were also raised with regard to low control of the meeting environment, as well as the need to practice. A higher participation from clinicians is probably needed in the implementation process to secure a good work environment and to better understand the shifting professional boundaries. Healthcare professionals in our study highlighted the need for policymakers to consider aspects such as resource prioritisation, equal access to care and effects on working environment in implementing digital video consultations.

Author affiliations

¹Public Health and Community Medicine, University of Gothenburg Institute of Medicine, Gothenburg, Sweden

²Center for Primary Health Care Research, Department of Clinical Sciences, Malmö, Lund University, Malmö, Sweden

³University Clinic Primary Care Skåne, Region Skåne, Sweden

⁴Department of Business Administration, University of Gothenburg School of Business, Economics and Law, Gothenburg, Sweden

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ORCID iDs

Karl Maack <http://orcid.org/0000-0002-8451-3289>

Fredric Karlsson <http://orcid.org/0009-0005-7086-0975>

Ewa Wikström <http://orcid.org/0000-0002-9154-7217>

Miriam Pikkemaat <http://orcid.org/0000-0002-9808-207X>

Veronica Milos Nymberg <http://orcid.org/0000-0002-3836-3048>

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