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"A glass half-full of opportunities"

The perceptions and lived experiences of Arabic-speaking immigrants using digital primary healthcare applications in Scania, Sweden

A qualitative content analysis study

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Abstract

Background: There is growing concern in Sweden about health inequity and unequal access to traditional primary healthcare among different socio-economic groups, predominantly immigrants. The use of information and communication technology in the health sector has been suggested as a potential tool to overcome healthcare accessibility and equity. Digital primary healthcare in Sweden was initiated in 2014, and it is still an under-researched area with no studies addressing the experiences of any immigrant groups on the use of digital primary healthcare in a Swedish setting.

Aim: The overall aim of this study is to understand what the introduction of digital primary healthcare services means to Arabic-speaking immigrants in Scania, Sweden, and to discuss the potential role of digital primary healthcare in increasing primary healthcare access and equity.

Methods: Through a qualitative content analysis, ten in-depth individual interviews were conducted, with in order to analyze the manifest and latent meaning of the informants' experiences.

Findings: Three overarching themes emerged from the analysis. *Turning obstacles into advantages* explains that digital primary healthcare was able to turn participant's challenges at traditional primary healthcare into advantages. *Resembling a roller coaster ride, enjoyable to those who can make it, but only for a while* illustrates that digital primary healthcare works well but only for uncomplicated medical cases and that access requires digital literacy and different levels of Swedish/English depending on the provider used. *Seeing a glass half-full of opportunities* illustrates how participants see themselves as being part of the digital primary healthcare future. However, they still experienced a need for further development of the tools to increase accessibility.

Conclusion: Digital primary healthcare offers potential solutions for the challenges experienced by immigrant groups with traditional primary healthcare; however, there are important limitations to accessibility and usage of the model. Offering bilingual consultation is the only current feasible digital option for immigrants who struggle with the Swedish language. Nonetheless, accessing these digital platforms still require basic Swedish/English and digital literacy for navigation and a Swedish/English proficiency for reporting a medical case, depending on the selected provider. As for the usage limitation, digital primary healthcare works only for mild health conditions.

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Abbreviations

WHO- World Health Organization

ICT- Information and Communication Technology

eHealth- Electronic Health

mHealth- Mobile Health

Digital PHC- Digital Primary Healthcare

OOP- Out-of-Pocket

Traditional PHC- Traditional Primary Healthcare

SKR- "Sveriges Kommuner och Regioner" The Swedish Association of Local Authorities and Regions

PWC-PricewaterhouseCoopers

QCA- Qualitative Content Analysis

CIOMS- Council for International Organizations of Medical Sciences

HCWs- Health Care Workers

E.R- Emergency Room

EMR- Electronic Medical Records

NPÖ - "Nationell patientöversikt" National Patient Review

1. Introduction

1.1 WHO and digital health

According to the World Health Organization (WHO), digital health has evolved tremendously and innovatively by applying different forms of information and communication technology (ICT) to address health needs (1). WHO reports that ICT, such as the internet and mobile phones, can be used as revolutionizing tools if implemented systematically to overcome some of the challenges faced in terms of healthcare accessibility, equity, cost effectiveness, and high-quality services in both developed and developing countries (2).

The term "digital health" is rooted in electronic health (eHealth) and is nowadays considered to be a wide umbrella term in this new field. eHealth has different subset areas, such as telehealth, telemedicine, and mobile health (mHealth) (1, 3). There is no universal definition for telemedicine and telehealth and since they are continuously developing both terms can be used synonymously (4). This thesis will use the WHO adopted definition of telehealth, which is the delivery of healthcare services on distance, where patients and providers interchange information through ICT to be able to diagnose and treat illnesses (4, 5). The focus in this study will be on the use of mobile application to seek healthcare in the Swedish primary healthcare context. It is considered a new area, where the consultations take place between primary healthcare clinicians and patients through the utilization of mobile application in the form of ICT. In this thesis, this concept will refer to "digital primary healthcare (digital PHC)". The delivery of the service can occur in real time (synchronously) e.g. via video or telephone consultation or it can be (asynchronously) e.g. when a question is submitted by a patient and answered later by a healthcare provider (4).

1.2 Primary healthcare in Sweden

Healthcare in Sweden is the county's responsibility run by 21 regional county councils. Primary healthcare is provided by both public and private providers with private primary healthcare centers representing 41% of all clinics in Sweden (6). While the healthcare is funded by the county income tax and some governmental grants, 15% are covered by out-of-pocket (OOP) payment. Primary healthcare is free for children under 18 or 20 (depending on the region) and for those above 85

years (6). However, there is a political and public concern regarding unequal accessibility to traditional primary healthcare (traditional PHC) services across different socioeconomic groups and across remote areas (6,7). Ekman et al. (6) reported that patients' satisfaction with traditional PHC visits in Sweden have been decreasing in the past years; (66% in 2012 vs. 60% in 2017), and patients repeatedly raise concerns about having difficulty in accessing healthcare services and navigating its complicated system. whereas, 90% of digital PHC users are highly satisfied (6).

1.3 Digital primary healthcare in Sweden

Digital PHC in Sweden has been developing rapidly since 2014. The private sector has played a vital role in initiating and developing digital PHC, and later on different regions started to establish their own digital PHC services (6). In 2016, the Swedish government set up an eHealth vision for 2025, to be the world's best country in employing the opportunities provided by digitizing healthcare, to make it easier for people to achieve good and equal health with patient-centered care focus (8). According to the latest report published in 2021 by the Swedish Association of Local Authorities and Regions (SKR) (9), there are ten digital healthcare providers in Sweden; five providers offer digital PHC and the rest offer specialized services for specific groups or specific conditions. The report indicates that 83% of the digital consultations in Sweden are provided by four Swedish private companies (Kry, Min Doktor, Doktor.se, and Doktor24) and 1% by CapioGo (9). Kry is the largest digital PHC provider with 40% market share and the only one that offers clinicians with several languages (9,10). The number of digital healthcare providers are constantly increasing in Europe and North America (7). In response, the notion of utilizing digital PHC consultation has been increasingly getting accepted in Sweden. In 2019, 1.2 million digital consultations occurred in Sweden compared to 600 thousand digital visits in 2018 (9,10). A tremendous increase occurred during 2020 due to the COVID-19 pandemic, in which 2.3 million digital consultations took place, of which 1.5 million were conducted with doctors. This accounts for 11% of all the doctor consultations that took place in primary care during that year (9,10). Digital PHC has witnessed an increase by 62% in March 2020 compared to February 2020 due to the pandemic in favor for digital private healthcare providers (9,10). Across Sweden digital PHC is primarily utilized by two major groups, parents of small children and young adults. Also, more women than men use digital PHC (6,9,10). The reimbursement mechanism for the digital provider is per-consultation and by out-of- county visits, paid by the patient's residency region (6). A Swedish cost-

analysis study done in 2017 found that the cost of digital PHC is roughly half of the traditional PHC cost, where the cost savings are seen from the societal perspective and the payer perspective (7). Another report done by PricewaterhouseCoopers (PWC) suggested that if one in five Swedes decided to carry out half of their primary care visits over the internet instead of a traditional visit, the Swedish healthcare system would be able to save SEK 1.2 billion annually (11).

1.4 Immigrants and primary healthcare in Sweden

Access to healthcare services and health equity for different socio-economic groups, particularly among immigrants, is considered a main political concern in Sweden (12). The Swedish Health and Medical Services Act demands all regional councils to promote health and provide healthcare services on an equal basis for all of the county's residents regardless of their socio-economic status (12,13). However, being a multicultural society such as Sweden (14) raises concerns in response to the increasing differences in health equity and accessibility to healthcare particularly among immigrant groups compared to native Swedes (12). Immigrants are acknowledged to be a vulnerable population, but the degree of vulnerability in relation to healthcare services varies depending on the demographic characteristics of the immigrants (15). Some of the most common factors that contribute to health inequity are related to language proficiency, educational level, and health literacy (16). There is strong evidence suggesting that the use of healthcare by immigrants is different from the use of natives (17). A study has stated that health disparities in the Swedish healthcare system have been increasing since the 1990s, where all health indicators are suggesting that immigrants' physical and mental health is substantially poorer than native Swedes (18). There are various reasons suggested behind the increasing healthcare inequalities, one being that immigrants do not seek healthcare when they actually need it, and the other that they are not getting the appropriate treatment when they seek healthcare. In addition, immigrants struggle in making their voices heard in the healthcare system (18). Previous Swedish studies about the experiences of immigrants in the traditional PHC centers, have reported that immigrants face challenges during their consultations. Some of those challenges are linked to miscommunication stemmed from language barriers and cultural differences, low patient-doctor trust, and discrimination. Other challenges are related to the healthcare system, some of those barriers being; long waiting time, lack of professional interpreters, short consultation time and a complicated referral system (12,18-20).

Arab immigrants are considered to be one of the largest immigrant groups in Sweden and their numbers are expected to increase in the upcoming years (19,21). A study from 2018 reported that first generation Arab immigrants constitute approximately 4% of the Swedish population (22). Although many Middle Easterners have been able to integrate well into Swedish society, they are still considered a vulnerable population due to having a high percentage of unemployment, low income, and poorer health compared to native Swedes (19). Arab immigrants also face many challenges in accessing and receiving care at traditional Swedish PHC centers (23). The use of ICT has a potential to increase healthcare access and provide equitable services, particularly for underserved groups (2). According to a Swedish study about the demographic use of digital PHC, this field is in its infancy in Sweden and Europe with little information about the use of this service and its impact. The study concluded that the expansion of digital PHC creates a need to understand how it is used by other subsets of the population, such as immigrants, to ensure equity and accessibility to digital PHC services (6). So far, no qualitative research studies have been found that address the perceptions and experiences of using digital PHC services among immigrant groups in Sweden or elsewhere. Thus, it is important to fill this research gap and gain an in-depth understanding of how digital PHC services are experienced and perceived by one of the biggest immigrant groups in Sweden. This deeper understanding will provide insight to policy makers, digital PHC providers, and researchers into the possibilities and barriers for the use of digital PHC by immigrants.

1.5 Aims and research questions

The overall aim of this qualitative study is to understand what the introduction of digital primary healthcare services means to Arabic-speaking immigrants in Scania, Sweden, and to discuss the potential role of digital primary healthcare in increasing primary healthcare accessibility and equity.

The main research question of the study:

What are the perceptions and lived experiences of Arabic-speaking immigrants using digital primary healthcare applications?

The sub-questions focus on the following aspects:

- What are the driving forces/motives behind their use of digital PHC services?
- How do they describe using a digital PHC application at different stages of the consultation?
- How do they see/perceive their future use of digital PHC?

2. Methods

2.1 Study design

A qualitative study design was considered the most appropriate approach for this study. This approach allows a deeper understanding of a phenomenon by exploring the lived personal experiences and perceptions of the participants (24, 25). The nature of this study design corresponds well with the ontological and epistemological assumptions within the interpretive paradigm. The ontological assumption of this paradigm considers reality to be subjective, multiple, and socially constructed (24,26). Qualitative studies mainly apply an inductive line of reasoning, in which it is not possible to start the study with a defined hypothesis because the author is interested in the subjective realities of the participants (24). This requires the researcher to apply a data driven approach and be open minded and ready to adjust for the unknown throughout the research process. Qualitative studies allow for this flexibility, and therefore, this study had an inductive approach to capture the participants' subjective realities in their socially constructed contexts (24). The epistemological assumption of the interpretive paradigm considers that knowledge is created through interaction between the researcher and the informants, making the researcher and the informants inseparable. This assumption allows for exploring and discovering new things during the research process, which can be valuable for areas that have not been researched before (24, 27). Given the scarcity of research about immigrants' usage of digital PHC applications in the Swedish setting, qualitative methodology was regarded a suitable choice (25).

Qualitative content analysis (QCA), as described by Granheim and Lundman, was adopted as the specific qualitative approach based on the aim and research questions (28). The QCA methodology

was chosen for its emphasis on the subject, the context, and the variation of experiences (28,29). It also provided the author the ability to describe and interpret the phenomenon on both the manifest level, e.g. being close to the participant's own words, and latent level, e.g. interpreting the underlying meaning of the text due to the collected rich data of the study (24).

2.2 Study setting

The study was conducted in southern Sweden, Scania region. Scania is considered to be the second largest region in Sweden after Stockholm in terms of population density (30). According to the latest statistics, Scania has roughly under 1.4 million inhabitants, 22% of those inhabitants were born abroad. The largest groups of those who were born abroad come from the Nordic countries, the former Yugoslavia, and the Middle East (31). There are no statistics that specify how many Middle Easterners live in Scania region. However, a study indicated that first generation Arab immigrant constitute around 4% of the Swedish population (22). According to latest reports published in 2021 by SKR, Scania is considered to be the third largest region in Sweden that utilizes digital PHC with 180 per capita visits per 1000 inhabitants in 2020. Scania region had 250,229 digital PHC visits in 2020 compared to 153,804 in 2019 (9,10). Digital PHC usage is concentrated more in cities than in rural areas (6,10), where Malmö had the highest digital PHC usage in Scania during 2020, with 77,658 digital visits (9,10). In 2020, Scania region was the third largest region to pay around 101 million SEK for its digital patient's visits, which makes the cost per region inhabitant 72 SEK during that year (9,10). There are five digital PHC providers available in the Scania region. As mentioned earlier Kry, Doktor.se, Doktor 24, and Min Doktor are the largest ones (9). Kry is the only one that offers clinicians with 25 different languages and Arabic is one of them (32). There are no specific data about the number of patients who utilize the service with Arab doctors at Kry in the Scania region. However, Kry's first quarter report in 2019, indicates that only 1% of the total digital consultations at Kry, in whole of Sweden, was done in another language than Swedish (33). This suggests that digital PHC services are not prevalent among non-Swedish groups.

2.3 The process of using a digital PHC application

People are able to contact digital PHC providers through a webpage or a mobile smartphone application. Once the application is downloaded, they need to put their personal identification number and verify it with BankID. BankID is an electronic application used by most official institutions in Sweden to verify user's identities. An account registration is needed for first time users, the process is done by inserting a phone number and an Email address. The following steps describe the medical case reporting process for the four largest digital PHC providers mentioned above. The application including the reporting section is offered in English and Swedish by Kry provider but only in Swedish for the other three providers. The reporting section has a list of all diseases and conditions that healthcare providers can treat digitally, and each disease is linked to an animated picture related to that specific disease. A notification with serious symptom's list appears once a specific condition is selected. This is to inform the user that they need to seek emergency care if they experience any of the listed symptoms. Then, an automated machine starts asking questions about the user's case with multiple choice answers. Once the case reporting is completed, the user gets notified with an estimated waiting time. As mentioned before, Kry offers 25 different languages, where they have a list of all their bilingual doctors stating only their names and their next available time for consultation. Once the user selects a specific doctor, the same registration process as mentioned above occurs. In addition to the financial public reimbursement for each user visit in the Scania region, Kry is the only one having patient fees for nurse, doctor, and psychologist consultations, while other providers have no patient fees and are only relying on public reimbursement.

2.4 Study population and sampling of informants

The target group for this study was individuals who had Arabic as their first language, resided in the Scania region with immigrant background and had a minimum age of 18 years old. In addition, the participants should have used any Swedish digital PHC application synchronously or asynchronously at least once. Furthermore, participants should have conducted the digital PHC consultation within one month period before the interview. This period was set based on a similar qualitative study addressing the experiences of native Swedes, that had found that this period enabled informants to remember the details of the consultation (34).

Participants were purposively sampled. The author aimed to have a maximum variation sample, in terms of having different demographic characteristics such as country of origin, urban and rural residency, age, educational background, gender, and level of Swedish language skills (24). The purposive sampling was achieved by initially turning to gatekeepers to reach people from the target group and later on by snowball sampling, where a participant nominates the following participant and so on (24). The gatekeepers had vast experiences in dealing with immigrants from the Middle East, since they were in charge of associations that work directly with Middle Eastern immigrants in Kristianstad and Lund municipalities. Based on their assessment of the most challenging period for immigrants, the author decided to include those that had stayed in Sweden for a maximum of five years.

To reach potential participants, the gatekeepers distributed an advertisement based on the inclusion criteria along with an Arabic translated version of the information letter throughout their social media platforms (see appendix 3). Four participants were included after reading the advertisement and the remaining six participants were reached by snowball sampling.

2.5 Data collection

In-depth interviews gave the possibility to capture and describe informant's personal experiences and perceptions (24). In this study, in-depth interviews were guided by a semi-structured interview guide that allowed a deeper understanding of the participant's experiences and perceptions in a systematic way (27).

The ten interviews were conducted during February and March of 2021 by the same interviewer (the author) in Arabic language. The author did not use an interpreter, as he speaks Arabic and English very well. The interviews were recorded digitally after explaining again the background of the study and obtaining informed consent. (24). Considering the COVID-19 limitations, all ten interviews were conducted through Zoom software, with audio and video connected on both ends. The author contacted the participants after they had read the information letter and indicated that they wanted to be part of the study. The initial contact focused on explaining the aim of the study in more detail and to build trust with the informants (24). Both a mind-map and a semi-structured interview guide facilitated the interview (see appendices 1, 2). The mind-map gave the interviewer possibility to ask open-ended questions with the flexibility to probe on things that came up along the way, whereas the interview guide was used as a checking tool that the interviewer had not

missed any questions (27). Both tools were subjected to modifications as a response to the emergent design throughout the data collection process (24). The tools focused on three main content areas: the driving forces behind the use of digital PHC consultations, the experiences of using digital PHC application at different stages of the consultation, and participants' perceptions about their future use of digital PHC. Since, the author is a Middle Eastern immigrant himself it was essential for him to put his pre-understanding within brackets, following the deliberate naïveté technique suggested by Brinkman &Kvale (27). The author tried to be naïve throughout the interview and gave the opportunity for the informants to share their full stories, emphasizing his interest in their specific experiences (27). After each interview the author made field notes, in which substantive, methodological and analytical notes guided the author on how and what to probe more on about specific areas in the next interview. The field notes also assisted the interpretation during the analysis process (24). The author had a debriefing session after each interview with the informants to capture any new information that was not covered during the interview and to mediate if any sad emotions appeared on the way. After the tenth interview, a peer-debriefing was held with the supervisor to assess the need for further informants. The supervisor and the author, regarded the information rich enough to look at the range and variation of experiences in the target group. Nevertheless, complete saturation was not possible due to the short duration of this thesis study. The interviews ranged between 32 and 64 minutes with an average of 44 minutes.

2.6 Data analysis

Qualitative content analysis (QCA) as described by Granheim and Lundman's was the most suitable analytical approach to implement during the analysis process (28). The author read all the transcribed interviews in (Arabic) several times to understand the data well and to get a clear idea of the participant's meanings. Having the full interviews as units of analysis, the author selected meaning units that were relevant to the study's aim and content areas. Then, all meaning units were translated to English and then summarized into condensed meaning units while maintaining the original meaning of the text (26, 28). The author ensured that all participant's words, gestures, and cultural expressions were included in the English translation.

During the analytical process of selecting meaning units, condensing, and coding (de-contextual-

ization) and the process of sorting codes into sub-categories, categories, and themes (re-contextualization), a data-driven (inductive) approach was applied, which helped to find both similarities and variations in experiences and perceptions (26, 29). Later in the analysis the author followed a more abductive approach, oscillating back and forth between preliminary findings and the data to discover the underlying patterns (24).

The coding process was facilitated by using the software program NVivo. The author started by coding the condensed meaning units with descriptive codes on a lower level of abstraction and interpretation in relation to the aim of the study (26). All similar codes were sorted under different sub-content areas in accordance with the research sub-questions. The author then developed categories and supporting sub-categories to interpret the text on a manifest level. Lastly, categories and sub-categories were further analyzed under three content areas to interpret the underlying meaning and develop themes on a latent level. The analytical process was not a linear process; the author was constantly going back and forth between the text and the interpretation to understand the part-whole relationship (28). *An example of the analysis process from text to themes can be found in table 2.*

2.7 Ethical consideration

The international ethical guidelines by the Council for International Organizations of Medical Sciences (CIOMS), that includes a description about the implications of the ethical principles on autonomy, non-maleficence/no harm, justice/empowerment, and beneficence, were taken into consideration during the study design and execution (35). In respect to the informant's rights of actions and confidentiality under the principle of autonomy, all the informants received the Arabic translated version of the study's informational letter in writing. Participants also received the information verbally prior to the interviews to confirm that participants understood what they were participating in. The informational letter described the background of the study, the process of handling confidentiality of the participants' information and stated the rights of actions to participants (27). On the interview day, the interviewer went through the information letter again and made sure to answer any questions that were asked by the interviewee. The interviewer informed the participants of their rights e.g. not to answer the questions they did not want to answer and that

they can withdraw at any time during the interview. After providing this information, the interviewer asked the participants for their approval to record the interviews and started the interview by recording an oral informed consent. In respect to confidentiality, the names of the participants were coded, and the interview materials were stored on password-protected hard-drive. The data were only accessible to the author and the thesis supervisor with the plan to be deleted by the end of the course in June 2021. The study was not expected to bring any harm. However, the author realized that talking about accessing healthcare could bring up sensitive health issues and needs for support. Thus, the author decided to give all participants contact information to a Swedish-Arabic doctor who had volunteered to be available. In addition, a debriefing session were held at the end of each interview to discuss anything related to the study and/or to reflect about any sad emotions that might have appeared during the interview.

This thesis study provided the opportunity for its participants to share their experiences with digital PHC, which allowed them to raise their voices. This can be seen as one of the possible advantages of this study for participants (25).

3. Results

3.1 Characteristics of participants

In total, ten participants were interviewed. Five of them were females and five were males. The age ranged from 20-54 years with an average of 36 years. Four participants resided in a rural area and six resided in an urban area during the time of the interview. Eight participants had used the Kry application while two participants had used the application provided by Doktor.se. The sample varied by nine different sociodemographic variables which can be found in Table 1.

Three main themes were developed based on the analysis of the ten interviews, supported by eight categories, and 25 subcategories. An overview of the results is given in Table 3. The findings are structured under the headings of the content areas with themes and categories as sub-headings. Sub-categories are included in the running text in **bold** *italics*.

3.2 THE DRIVING FORCES BEHIND USING DIGITAL PRIMARY HEALTHCARE SERVICES

3.2.1 Turning obstacles into advantages

This theme illustrates the factors that played major roles for the participants to have decided to try out digital PHC. The fueling factor stemmed originally from the participant's negative experiences from using the traditional PHC. In response, they started looking for better alternatives inside and outside of Sweden. Participants saw the advantages offered by digital PHC as a potential solution to overcome their challenges at traditional PHC.

Traditional PHC- not meeting the health needs

Participants were disappointed after ***experiencing long process and time to receive care*** at traditional PHC. It sometimes took weeks to meet a general physician while being in pain. They emphasized that the waiting time was not better prior to COVID-19 but takes even longer time now.

> *"[…] there is a long waiting line even before corona, now it is worse […] my husband got an appointment after three weeks while being in real back pain" (P-5)*

Participants also thought that the system was complicated and did not understand the role of the triage nurse in approving who should see a doctor. They felt the system made the process long and created more walls between the patient and the doctor.

> *"[…] the system is complicated; they made many walls between the patient and the doctor. It takes weeks to see a general doctor" (P-10)*

> *"I cannot understand why I need to go into many steps. Why does a nurse need to give me the approval to see a doctor? Just making things more complicated" (P-6)*

Participants felt that they were not taken serious by the Swedish health care workers (HCWs), and they were treated as if they exaggerated their pain. They felt like the only treatment offered to them was to take Alvedon and drink water. Additionality, they were surprised when HCWs were using google or reference medical books, to search the symptoms of patients, assuming that doctors should know everything beforehand.

> *"HCWs at traditional PHC used to treat me as I have nothing or as I am over exaggerating with my pain. They used to tell me just go take Alvedon and drink water after googling my symptoms, I am surprised, how can a doctor not know these symptoms beforehand" (P-6)*

Also, the idea of not sending the patient for checkup tests e.g. x-rays and blood tests were seen as if Swedish doctors did not practice medicine right.

> *"I am surprised how can a doctor assume you are fine without sending you further to do more tests" (P-4)*

Participants also described that Swedish doctors took a long time to diagnose participant's diseases, and sometimes they were not able to give any diagnosis. As a result, participants started ***questioning the Swedish HCW's capabilities***. Many participants saw that contacting their homeland doctors was a partial solution. They were confident that their homeland doctors were able to give them the right diagnosis on the phone. The participants were constantly comparing doctors in the Swedish healthcare system with their homeland doctors, and rationalizing that homeland doctors were more skilled, because they get exposed to many cases per day in their home countries.

> *"Syrian doctors are more skilled because they meet many cases every day, I called and described my symptoms to a doctor. He was able to diagnose me with IBS before all Swedish doctors I been to… Swedish doctors did not know what was wrong with me" (P-3)*

Although the majority of the participants knew some basic Swedish, they thought of health as a serious issue, which required delivering the message clearly to the doctor, and that their level of Swedish did not allow.

> *"[…] although I know basic Swedish, I request an interpreter, because we talk about health here; it is not like practicing your Swedish at H&M" (P-5)*

When participants requested and were provided interpreters, they realized that interpreters were not always competent at their work.

> *"Language is an issue; our messages do not get delivered correctly even with the presence of an interpreter. I feel sometimes those interpreters are not experts in their fields" (P-10)*

Some interpreters were speaking different dialects, which made it difficult for participants to understand what interpreters were saying. Thus, participants were ***seeing language and interpreters as obstacles*** in the traditional PHC.

"I don't understand the interpreters, myself. They speak different dialect. Language for me is a big problem" (P-1)

Participants also felt lack of privacy due to the presence of an interpreter, which made them not reveal everything to the doctor.

"I do not say everything to the doctor, I feel embarrassed because the interpreter is with us" (P-7)

Digital PHC - disrupting the paradigm of traditional PHC system

Some participants were infected with the corona virus and wanted to seek healthcare. However, they were cautious of not spreading the virus to others. Therefore, they decided to choose digital PHC.

"I never thought of using digital healthcare, but I was infected with corona and needed help, did not want to go to the clinic and spread the virus" (P-5)

Others wanted to avoid going to traditional PHC, in order not to be exposed to the virus. Participants felt they were ***being forced to new solutions by the COVID-19 pandemic***, and that the pandemic gave them the opportunity to explore new paths in the healthcare system.

"I did not want to go to healthcare center because I was afraid of getting corona […] I am happy that I discovered a new path here" (P-9)

Participants felt very comfortable and happy with the idea that they were able to talk to a doctor in their own language directly, without waiting a long time. Some participants did not believe it existed until they saw it with their own eyes. By ***getting immediate appointments without interpreters***, participants realized that digital PHC, was able to give solutions to the obstacles they faced in traditional PHC. This made them feel that they were able to talk more freely and with privacy.

"[…] they told me that you can book your appointment with an Arab doctor immediately. I really could not believe it until I saw it, I was really happy" (P-10)

"It is different when you talk Arabic with your doctor, you can explain better and talk freely with no interpreter around" (P-7)

One participant who spoke very good Swedish, for her it was not the language that created problems. The decrease in waiting time was what made her try out digital PHC.

"I speak very good Swedish, but with holiday seasons if you want to schedule an appointment at traditional PHC, it will take long time, so I decided to try doktor.se" (P-2)

Some participants were ***appreciating the continual availability***, and seeing the ability to talk to a doctor from anywhere and anytime, as something important. Particularly those who cannot access healthcare services during the office hours. Some participants stated that they could not leave work, as they could not afford losing the off-work money.

> *"[…] It is really important that we are able to reach digital doctors at anytime, for me I cannot leave work; I need every krona, my family here and in Syria are relying on me" (P-1)*

While other participants said that they needed to consult a doctor on a weekend about a non-emergency case, which was needed but it did not require an emergency visit.

> *"[…] it was Saturday morning, our healthcare center was closed, and my son's case does not require to go to the ER, I am happy they [digital PHC] are always open" (P-10)*

3.3 EXPERIENCES OF USING DIGITAL PRIMARY HEALTHCARE APPLICATIONS AT DIFFERENT STAGES

3.3.1 Resembling a roller coaster ride, enjoyable to those who can make it, but only for a while

This theme reflects the underlying experiences of participants going through all different stages of digital PHC applications. From accessing the application until meeting the digital doctor. The roller coaster with its rising action, represents the long-detailed consultation. While the falling action part represents the quick consultations. Both parts give enjoyment to riders as both types of consultations had successful outcomes for patients. Then realizing that not everyone can ride a rollercoaster, that those who have complicated cases like high blood pressure or heart problems are not allowed/welcome to join the ride. The same concepts can be applied to digital PHC, where only mild medical cases can be handled through digital PHC services, while the complicated ones need to go to the traditional PHC or Emergency Room (E.R). People who can make it are usually the ones with high digital literacy, and have various levels of Swedish/English depending on the digital PHC providers, while those that have low digital literacy or does not understand Swedish/English face difficulties. However, even for those who made it, their enjoyment will be only for a while, until they need to do a checkup test, or their cases become complicated, then at that

point they lose all the privileges offered by digital PHC.

Providing equal but not equitable access

Digital PHC applications were seen as equally accessible for everyone in the application store. However, not everyone was able to download and navigate the application. All tech-savvy participants found the application was easy to download and navigate, just like any social media platforms. However, tech illiterate participants thought it was challenging and needed someone's help to do it. Participants acknowledged that digital PHC services are ***demanding digital literacy*** and ***requiring basic skills in Swedish or English*** depending on the digital PHC provider in order to download the application and set up an account.

> *"Accessing the app was really easy and friendly, just like you are downloading any social media platform" (P-6)*

> *"I am not good with technology nor the language. My daughter helped me to download the application, I would not been able to make it alone" (P-4)*

Participants were ***needing a computerized I.D verification*** application called BankID, in order to access digital PHC services. This was a prerequisite requirement to verify participant's personal numbers digitally and was the only way in. The link between BankID and the application was seen as something important by some participants since it gave more credibility to the healthcare provider, and more privacy to the patients.

> *"You need to have BankID to access the application, my mother is an old woman and does not have BankID, we could not do anything for her" (P-4)*

> *"[…] just because the app is linked with BankID, I feel it is more credible and it gives more privacy to the patient, as no one can access your information" (P-5)*

Demanding high self-confidence

Participants described the importance of ***having the ability to self-assess the case*** before reporting it and saw it as an essential step. Most of participants indicated that they were confident in their ability to do self-assessments and evaluate if their cases required digital PHC, E.R, or a traditional PHC visit. It was clear that all participants were ***understanding that digital consultations are not for serious cases***. The ability to do the right self-assessment, helped the patient to have a successful digital PHC consultation later on.

> *"Self-assessment is an important step if you want it [digital consultation] to work. If you are having a chest pain or bleeding heavy blood, the application will be no use, you need to call the ambulance. But if you have simple case or you want to consult with the doctor about something, I think the application can be a good help […] I believe I have the ability to do my self-assessment correctly" (P-10)*

One participant reported that in case her condition was not critical and she did not know where to go, she would let the digital doctor evaluate her case if it needs a physical examination or if it can be treated digitally.

> *"If I was not sure about my condition, and it was not that serious. I would call the online doctor and see if they would help me or tell me to go to the healthcare clinic" (P-3)*

Participants asserted that they were ***being reminded to consider the need for emergency care***, every time they reported their cases on the applications. Participants described when they selected their reported condition on the application, a notification appeared with a list of critical symptoms. It suggested them to call 112, if they experienced any of the listed conditions.

> *"The app even has a notification where it says if you experience some of the listed symptoms you should call 112" (P-3)*

<u>Being triaged by a machine works both ways</u>

Participants realized that the nurse's triage role was being replaced by a machine. They explained how they were able to quickly locate their reported condition box, with the help of self-explanatory pictures in the reporting section. Therefore, they were ***finding the machine user-friendly***. Participants also thought that the application was quite helpful when it comes to navigation and it is continuously being updated.

> *"It was easy for me to find the skin picture, I clicked on it. Then an automated machine started asking me questions, I believe nurses are being replaced with machines now" (P-2)*

> *"You feel that the app is easy to navigate and being constantly updated. During summertime, they add the allergies option and now they have the corona option (P-6)*

Most participants considered the machines to be efficient and save time when the case is not serious. Therefore, they were ***acknowledging its potential time benefits***. They also thought that machines are there to ask same questions asked by a nurse, and it was not for them like the machines will be diagnosing the patients.

"The doctor will check these answers, it is not like the machine will diagnose me […] you can report your case within five minutes from anywhere, instead of taking time off to go and get triaged by a nurse, especially for me who study and do not have a car…. I think it [machine] is good when you do not have a dangerous thing" (P-2)

"The questions I got are usually what a nurse would ask at a clinic" (P-1)

Other participants ***appreciated the non-human aspect*** and preferred to communicate with a machine rather than a human, after having a bad experience in communicating with HCWs at the traditional PHC. Particularly, for those who did not speak Swedish at all, talking to a machine allowed them to take their time in translating and understanding the questions.

"Calling the traditional PHC to book appointments started to affect me badly. I did not want to talk to humans, in the app everything is by writing, we take our time to understand and translate the questions" (P-4)

Others were more skeptical about the ***expectation of high matching possibilities***. One participant selected initially a doctor from the doctor's list without knowing the doctor's background and thought when she reported her case that the machine would be able to detect her problem and send her to the right doctor that speaks her language, but that was not the case. She explained that if she was talking to a human being, this would not happen.

"If I was talking to a human being, I would have explained that I want an internist, but since I am talking to a machine, I could not do anything, I got anesthesiologist" (P-3)

All participants found the question section in the reporting section to be challenging due to language issues. This is applied to all the digital PHC applications that were used regardless of participants' Swedish level. Even the participant with advanced Swedish level, needed to translate some of the words in the questions. All participants ***needed translation help*** and sought it from different sources. Some participants asked a friend, but most of the others used a translation application.

"The question section was a bit challenging, I understood some questions, other questions I had to translate through google translate" (P-1)

"I speak good Swedish, but there were some words I did not know, so I had to look them up online" (P-2)

"My daughter helped me in this process. But as I told you, her Swedish level is basic; we used an application to translate the questions for us" (P-4)

Satisfying but only for uncomplicated cases

Some participants described digital doctors as being good listeners and that doctors gave them enough time to explain their cases. It was a relief for participants with limited Swedish language skills to be able to explain themselves in their own language. In addition, some discussed how digital doctors were very competent by using pedagogical methods such as drawing pictures to explain the case for participants.

> *"I was happy that language was no longer an issue and I was able to express myself well to the digital doctor […] The doctor took his time in the consultation. He even drew a picture to explain how the intestine works […] My son is no longer having constipation issues" (P-10)*

Also, a participant with an intermediate Swedish level appreciated consulting with a Swedish doctor, since the doctor was very understanding and spoke slowly with easier Swedish words to facilitate the communication.

> *"I guess when he [digital doctor] heard my Swedish, he started to speak slowly and use easy words, I really appreciated it" (P-8)*

Other participants thought that digital doctors were rushing through the consultations not bothering to clarify the cases well. However, all participants who had mild cases reported that, ***whether having long or rushed consultations, their problems were solved***.

> *"It was a quick consultation, he said that he will prescribe me a medicine and I need to apply it three times a day. I was telling myself, is that it!! […] At the end, I got the right treatment and my problem was solved!!" (P-2)*

There were also descriptions of ***consultations for more complicated symptoms that turned into a terrifying experience.*** A participant experienced a condition symptom in the reminder's notification list which suggests the patient to seek emergency care if they experience any of the listed symptoms. The participant decided to neglect the reminder and "meet" the digital doctor. Although the participant knew he had a colon problem accompanied by mid-chest pain, the digital doctor informed him that it might be a heart attack and he should immediately seek emergency care. The participant explained that hearing the doctor saying that it might be a heart attack made him think it was actually a heart attack, and he described it as a terrifying experience. Upon examination by a doctor in person, it turned to be a stomach problem. The participant stated that he would not blame the digital doctor because it was safer for the digital doctor to suggest it was a

heart attack instead of a stomach problem rather than the other way around.

> *"The doctor scared me more than he helped me, he said it could be a heart attack. I was terrified after what he said" (P-7)*

> *"Those symptoms are close to heart attack, it is a big responsibility if he [digital doctor] said its colon and then turned out to be a heart attack, that's why he told me to go to the hospital" (P-7)*

Participants mainly ***felt safe and confident about the prescription process and treatment***. They noticed that digital doctors were cautious about prescribing medications. Some participants explained that digital doctors prescribed over-the-counter medicine, and it helped their cases.

> *"The doctor told me that my case can be solved with a medicine that I can buy without a prescription" (P-4)*

Other doctors refused to prescribe any medications without a physical examination. This made participants to feel safe and more confident in the digital doctor's prescribing decisions.

> *"Digital doctor said he can't prescribe for me anything, as I need to be physically examined first. I feel digital PHC is a safe place with such a decision" (P-9)*

Also, participants who received prescriptions described the process as an easy one and praised the efficiency of the renewal procedure.

> *"Getting a prescribed medicine was easy, everything was under my personal number when I went to the pharmacy […] When I renewed my allergies drugs; my prescription was approved within 10 minutes. It went really fast" (P-6)*

Participants liked that there was a cooperation between digital and traditional healthcare providers. The ones who needed a referral to a physical doctor or a physical therapist, digital doctors were able to contact patient's clinics where they were registered and book for them an appointment. This process saved participants a lot of time.

> *"I did not know that there was a cooperation between them [digital and traditional providers]. They contacted my healthcare center and booked me an appointment with the physical therapist. It was convenient, saved me a lot of time. If I go myself, I will need to go through the nurse, the doctor and then meet the physical therapist" (P-8)*

However, participants lost the feeling of convenience when they were referred to do a blood test at a physical clinic since the patient's informational systems between digital and traditional providers were not linked together.

> *"The two systems [digital and traditional PHC] are not linked together. so, the privilege I had to be at home is no longer available. I needed to go through a complicated process to do a blood test because I do not have a car or a printer to print the test request" (P-3)*

But they believed that it was worth doing, because they appreciated the digital doctor's willingness to prescribe more test checkups than doctors in the traditional PHC. Thus, participants ***found the referral system to other healthcare providers both convenient and inconvenient***. The best was to be registered at the same digital and physical healthcare provider.

> *"I felt relieved when I knew that I had lactose intolerance. I discovered something new with this test, I am sad that traditional doctors did not ask me to do this important test before, they do not make us do further tests like digital doctors" (P-3)*

> *"I am registered with their digital and physical clinic; it was an easy process to do the blood test" (P-6)*

3.4 THE FUTURE USE OF DIGITAL PHC

3.4.1 Seeing a glass half-full of opportunities

This theme reflects participant's perception on their future use of digital PHC. Participants see digital PHC as a glass of opportunities due to its many advantages. Some of those advantages are convenience, efficiency, and most importantly the ability to talk to a doctor with your own language immediately by one of the digital PHC providers. Participants also see that the glass is half full, and half empty, meaning it is not a complete system by itself. The system has its limitations, where the half full represent participants optimism for seeing themselves in being part of digital PHC future, as they will be using it for uncomplicated cases. The other empty half represents the limitations seen in the digital PHC system by participants. Some of these limitations require some application enhancement to increase participant's accessibility, while having no solutions to other limitations e.g. the complicated cases that requires physical examination.

<u>Becoming increasingly equitable and informative</u>

All participants identified ***a need for having more available languages in the applications*** to increase patients' accessibility to digital PHC. Participants acknowledged that more non-Swedish people would be able to join Kry services, when more languages are added to the platform.

> *"If Kry add Arabic language to the application, it will allow more Arab people to use the application" (P-7)*

Participants who consulted their cases with an Arab digital doctor raised an important point, where they discussed how it was challenging for them to report their cases in another language than Arabic. They explained that it would make more sense, when digital PHC provider offers bilingual doctors is to have the reporting section in those languages as well, to be able to access this service fully.

> *"Arab patients will have difficulty reporting their cases. Although Kry say that they provide Arab doctors, but if I cannot report my case in Arabic, how will I be able to access the Arabic doctor" (P-1)*

Other participants who have used providers that only offered Swedish language, they suggested adding English language to their services. This will help those who speak English and do not want to pay patient's co-payment at Kry to access other digital PHC services.

> *"If they [Doktor.se] can add more languages, at least an English one, to allow patients who speak English the ability to use the application without paying any patient's fees at Kry" (P-8)*

Participants were also ***suggesting to add specialization background in all lists of doctors***. This would help non-Swedish speaking users to select the right doctor already during the reporting process. Otherwise, participants would end up with a wrong doctor.

> *"[...] what I did not like, is not being able to see the specialty field of the Arabic doctor while choosing the doctor, it would be good if they add their specialization" (P-3)*

<u>There is a possibility in every limitation</u>

All participants were ***envisaging potential time and money savings*** that could come from the ability for digital PHC to cater for meetings with Arab doctors, being available and efficient. This made participants appreciate the hidden opportunity of digital PHC.

> *"Digital PHC is efficient and fast. They also have good services and offer Arab doctors that will save you time and money" (P-2)*

Participants also understood fully the limitation of digital PHC, which made them ***see themselves as future users for uncomplicated cases*** only.

"I will use this service in the future […] Except the questions in the reporting process, it is a user-friendly app, where you meet an Arab doctor directly. The whole process takes 30 minutes, but of course it is for simple and mild cases. If you have a complicated case, you need to see a doctor face to face." (P-6)

4. Discussion

4.1 Overview of findings

This study is the first in Sweden to explore how Arabic-speaking immigrants experience their digital PHC consultations through using a mobile application. Three overarching themes were developed based on the descriptions of participant's PHC journey: *1) Turning obstacles into advantages; 2) Resembling a roller coaster ride, enjoyable to those who can make it, but only for a while; 3) Seeing a glass half-full of opportunities.* The findings suggest that digital PHC can be seen as a potential alternative approach to overcome barriers that Arabic-speaking immigrants encounter in traditional PHC. However, participants recognize its limitation in that it can only be used for uncomplicated medical cases. Additionally, participants acknowledge that accessing digital PHC require digital literacy and different levels of Swedish/ English language skills, depending on the selected digital PHC provider. Lastly, participants see themselves as part of the digital PHC future and suggested some improvement in the PHC applications to increase access for them and other immigrant groups.

Since digital PHC is a relatively new field, studies about digital PHC are scarce with no previous studies addressing the usage of digital PHC among specific immigrant groups. Therefore, the results will mainly be discussed in relation to studies on more general aspects of digital PHC, native Swedes' experiences, and immigrant healthcare usage. Furthermore, some discussions will be referred to reports that was done by official Swedish institutions.

4.2 The motives behind using digital primary health care services

In this thesis study, the participants' viewed the traditional Swedish PHC system as a complex one and they perceived it as a totally different system in comparison with the healthcare systems in their home countries, which made it difficult for them to adapt to it. Their frustration with the traditional Swedish PHC, based on long waiting time to meet a doctor, the nurse's triage role, the

feeling of not being taken seriously and difficulties in getting the right diagnosis or treatment, made them start seeking alternative healthcare from abroad. These results are mirrored in a Swedish study of newly arrived young Iraqi's attitudes to sexual and reproductive health and their perceptions on navigating the traditional Swedish PHC (36). Another study addressing Somali's refugees' experiences at the traditional Swedish PHC also shows how their feelings of distrust led them to seek healthcare in other countries (37). The participants in this thesis study were able to relate the similarities between digital PHC and their home countries' healthcare systems. Both systems offer meeting a doctor on the same day or the day after without going through a gatekeeper that could prevent someone from meeting a doctor. Also, contacting a doctor at a distance was not something new for them since they were accustomed to contacting their home countries' family doctors on the phone. Thus, they considered digital PHC as a feasible option that they could easily adapt to and perceived as a potential alternative to overcome their challenges at traditional PHC.

Different studies addressing patients' and HCWs' experiences of using interpreters within the Swedish PHC setting, show that communication challenges are still present even when using interpreters (19,21,38). These challenges include; interpreters and patients use of different dialects, lack of interpreter's knowledge in medical terms, interpreter's low interpretation skills, and most importantly confidentiality issues. The studies highlight that having an interpreter during the consultation, make informants be less comfortable to talk openly about their conditions with the doctors (19,21,38). Other Swedish studies have shown that employing bilingual HCWs will increase patient's understanding and satisfaction while also decreasing diagnoses errors, cultural barriers and costs of interpreters (18). Thus, it is considered an opportunity for providing more equitable primary healthcare services (39). This is in line with what the participants of this thesis emphasized, when stating that interpreters were more of an obstacle than a solution for them. The ability to speak with a doctor directly without an interpreter was seen as central for the participants, illustrated in their choice of contacting the only digital PHC provider that offers clinicians with different languages, including Arabic. Only participants that had a higher level of Swedish language skills were able to consult with a Swedish doctor via other applications. The motives for this group were getting a quick appointment and not paying any patient's fee. This means that even if individuals have high digital literacy but their knowledge in the Swedish language is low, they will

face challenges in accessing digital PHC providers that offer only Swedish doctors. Thus, employing bilingual HCWs to overcome communication challenges is something that needs to be encouraged both for physical and digital PHC meetings.

The participants in this study expressed that COVID-19 had pushed them to explore healthcare paths they never had thought of taking. They had been afraid of spreading or contracting the virus at the clinics and were in retrospect pleased that they had dared to explore the digital path. A similar pattern was found in a study exploring Swedish elderly individual's perceptions about the use of digital PHC illustrating a reluctance and ambivalence towards digital solutions but also seen as a potential need based on the fear of virus transmission threats (40). The SKR report and another Swedish study confirm how new threats like COVID-19 forced developing new avenues for care. The Swedish study reported an increase of 60% in digital PHC visits in March compared to February 2020 due to the COVID-19 pandemic (41), and per the SKR report, there was an overall increase of digital PHC use by 100% in 2020 compared to 2019 (9). This indicates that a serious threat like COVID-19 can disrupt the paradigm of traditional PHC and force people in general, not only immigrants, to accept integrating technology into their lives for their own safety and the safety of others.

A systematic review on the use of digital PHC reports that convenience is the main reason for choosing digital consultations across several studies, and that digital PHC has enhanced healthcare accessibility by offering services outside the working hours (42). Also, different qualitative studies addressing users' perceptions on digital PHC, illustrate how participants see the high availability to digital PHC to be the most positive aspect (43,44). Participants in this thesis study also highlighted that convenience was a vital factor for them in choosing digital PHC. A mixed method study from Jönköping University, considered to be the only study in a Swedish setting which captures the experiences of digital PHC use among native Swedes, indicates that the increase in availability offered by digital PHC is also a motive for its use among native Swedes (34). Thus, this can be seen as common driving force behind trying out digital PHC, specifically important for people with low socio-economic status that need to make ends meet by saving time and money.

4.3 Accessing digital primary health care applications

Digital PHC is available to all Swedish citizens. A Swedish study that explored the demographics

utilization of digital PHC, indicates that digital PHC services are primarily used by better off people with a significant negative correlation between utilizing digital PHC and low socio-economic status (6). The results from this thesis study illustrates how this may be linked to the fact that even if the participants chose an application that offered a clinician speaking Arabic, they still needed digital literacy and basic skills in English/Swedish to be able to use the services. Only those with a higher level of Swedish language skills had the option to choose other digital PHC providers. Since immigrants are a heterogenous group, where the level of digital literacy and Swedish language skills varies, it is clear that some immigrants will benefit more than others from these services. The older participants in this thesis study were the only ones who had challenges and needed help in accessing and navigating the digital PHC model. This was not the case in a study exploring the perception of native Swedes on digital PHC, where the older participants found accessing and navigating the application to be fairly easy (34). This difference may be explained by the low level of education and limited digital literacy of the older thesis study participants. The younger thesis participants however did not find any challenge accessing and navigating the application because of their high digital skills and basic knowledge in English/Swedish.

According to the 2019 quarterly report from the digital company offering consultations in several languages, only 1% of its total consultations were conducted in other languages than Swedish (33). This mean that non-Swedish groups are having challenges accessing even the most convenient digital PHC providers. From the results of this thesis study, these challenges can be due to language issues, where participants do not know how to report their case in English/Swedish and/or that their digital literacy does not allow them to access and navigate the application. Moreover, digital PHC services are only advertising their services in Swedish language, and none of the Swedish integration channels that immigrants use inform them about such services. The participants in this thesis study mainly knew about the digital services through a friend, which can be seen as a limiting accessibility.

4.4 Deciding where to seek healthcare

This thesis study acknowledged the demand on digital PHC users to be able to evaluate their conditions before deciding on the appropriateness of seeking digital PHC. These findings mirror the findings from the qualitative study addressing the experiences of native Swedes using digital PHC

(34). Here the author emphasizes on the important role of the self-assessment process, without which many consultations will be directed into traditional PHC. This may end up costing taxpayers more since several visits will be needed for the same case. The participants in this thesis study were mainly confident in their self-assessment and acted accordingly, which may be explained by their comparatively high level of education and health literacy. However, there were also examples of how low level of education made self-assessments difficult and led to the consultation resulting in an Emergency Department visit.

4.5 Reporting a medical condition to a digital platform

From the findings of this thesis, it is clear that reporting a case into a digital platform is challenging, regardless of participant's level of Swedish language. All digital providers demand the report for triaging to be done in Swedish/English, depending on the selected provider, and all the participants needed support in this process. However, the situation is very different for native Swedes that do not seem to have any issues in reporting their cases (34) and this severely limits the access to digital PHC for immigrants.

Another identified challenge was the difference in a patient reporting case symptom to a Swedish or a non-Swedish clinician. If the patient is reporting to a Swedish clinician, the electronic triaging system will match him/her with a doctor with the correct specialty. However, when reporting to a non-Swedish clinician, the patient starts by selecting a physician who speaks his/her language without knowing the clinician's specialty because this information is not available in the doctor's list. This leads to reporting one's medical issues with a physician unmatched to the patient's medical condition. Thus, if the clinician has to refer the case to another physician with the appropriate specialty, there is a risk of delaying the care-seeking process. This can be readily resolved by adding all doctors' specialities to the lists provided to incoming patients.

4.6 Meeting a digital doctor

Participants in this thesis study, were mainly satisfied with their experiences of meeting a digital doctor, especially when they communicated in their own language, which increased privacy in the consultation and decreased miscommunication issues. The participants were very aware of the

limitations of digital PHC to be best for handling mild and fairly uncomplicated cases. These experiences are similar to those of native Swedes, who perceived their consultations to be held by competent and professional digital doctors, but also recognized the limitations of the consultations to mild cases (34). This is something that is also brought up by both Swedish nurses and doctors, who describe digital PHC as platforms that are good for managing simple cases, but less useful for complicated cases (45). These results indicate that digital PHC can be seen as a potential alternative for immigrant groups to meet some of their health needs, even if it is only limited to mild medical cases. It is known, from this study as well as from other Swedish studies (37,39), that some immigrant groups have become hesitant to seek healthcare because of the challenges they face at traditional PHC (37,39). Increasing their accessibility to digital PHC may thus help enhance their overall health.

In this thesis study, participants felt that digital doctors were cautious when prescribing medications, making participants feel safe and confident about the prescriptions. This supports the SKR report which shows drug prescriptions at digital PHCs are restricted to what is reasonable to manage digitally unlike traditional PHCs who do not have these restrictions (9). Similarly, a Swedish observational study found that asynchronous digital PHC is not associated with antibiotic over prescription compared to traditional visits (46). This indicates that prescribing medications at digital PHC is highly restricted, which is particularly important when dealing with immigrant groups. Due to this thesis study's participants' high level of education, they perceived these restrictions as safe measures. However, an Australian study reported that individuals with an immigrant background and low educational level preferred and expected antibiotics to be prescribed for symptoms not requiring antimicrobial agents (47). Another Swedish study found that being born outside of Sweden, as one of the parental characteristic factors, was associated with higher use of antibiotics among 8-month-old children (48). Considering that parents are one of the largest digital group users, and with the increased use of digital PHC by immigrants, these restrictions are appropriate.

In a report from Stockholm County Council (49), researchers raise a concern that digital PHC could turn into a parallel system without being integrated with all parts of healthcare. The lack of coordination between digital and traditional PHC information systems produce a challenge for

patient referrals. This risk is mirrored by the participants in this thesis study, who found it problematic when becoming aware that the digital and traditional PHC does not share the same electronic medical records (EMR). This raises a potential safety issue, particularly for those who have chronic diseases, in which doctors working in digital and traditional PHC will not be able to see all the patient's medical records. Although there is a National Patient Review (NPÖ), an EMR system, that all providers have access to, but not all providers use (49). Thus, for patient's safety and convenience, it would be important for all primary healthcare providers to use NPÖ for patient's records and referrals.

4.7 Future use of digital primary health care

This thesis study found that language was the main challenge for reporting a case to a digital application. All participants saw a need for digital PHC applications to allow reporting in their first language. They also saw that the future of digital applications for immigrants lies in offering bilingual doctors. In addition, participants recognized the need to specify the specialty of the doctors at the doctor's list before reporting the case. As for other providers that offered their services in Swedish, the few participants who utilized it, did not find any problem accessing their services, as language was not an issue for them. Several studies, Swedish as well as international have emphasized the need for tailored e-health interventions, where language and cultural backgrounds are taken into consideration when dealing with different immigrant populations as well as the need for providing e-health literacy courses for those who need it (40,50-54). These measures may improve access and equity for many immigrant groups, diminish the danger of their digital exclusion and incorporate them into the digital PHC future.

4.8 Methodological considerations

According to Dahlgren et al. (24) and Graneheim & Lundman (28) the trustworthiness of a study can be discussed in relation to the four criteria of credibility, transferability, dependability and confirmability which will be addressed below.

Credibility reflects a study's ability to capture the multiple realities of the participants (24). A strength associated to credibility is the variation in participant's sample. Participants in this thesis study had different ages, genders, education, country of origin, and Swedish language skills. This

resulted in a variation of experiences. Different measures were taken to increase credibility. First, peer-debriefing meetings were held with the supervisor to review the entire process of analysis and interpretation. Second, the finalized analysis was shared for member checking with a community member, who has experience in working with Middle Eastern immigrants and is knowledgeable with digital PHC (24,28). Third, although the data collection period was relatively short, the author made some measures for prolonged engagements (24). The author called participants prior to conducting the interview and had long informal conversations with them, in order to build rapport and trust with them, the same was done, on the day of the interview. Fourth, participants were engaged fully during the interviews, which yielded rich data (28). Lastly, the author coded one interview twice, at two different times in order to explore any inconsistencies in the analysis process.

Dependability deals with the researcher's ability to account for the constant modifications made in researcher's decisions throughout the research process (24,28). Given that the researcher and participants are interconnected in co-creating the interview, it becomes more a matter of controlling dependability than increasing it (24). Two strategies were taken to control dependability. Substantive and analytical notes were taken during the interviewing process, and comprehensive descriptions for the methodological and analytical process were included in the report (24).

The transferability of this study to another context is to be judged by the readers, who are familiar with the new context that they want to compare with (24,27,28). However, in order to facilitate transferability, the researcher must provide a thick description of the context (24,28). The author has provided a detailed description of study's settings, participant selection, a table of participants' socio-demographic characteristics, the data collection process, and the analytical process. In addition, the findings are presented with participant's quotations (28).

Dahlgren et al. (24) explain that confirmability in qualitative studies addresses data's neutrality rather than researcher's neutrality because the interaction between the researcher and the participant is unpreventable (24). Increasing confirmability was established through quoting participants and illustrating analytical tables in order to indicate how the author reached to the conclusions. In addition, the process of data collection and analysis was discussed intensively with the supervisor to confirm the neutrality of the study procedure. Lastly, the author has bracketed his pre-understanding throughout data collection and the initial analysis steps, in order not to influence the results, a step that was accompanied by taking extensive field notes (24).

4.9 Strengths and limitations

This is the first study focusing on immigrants' experiences of using digital PHC services in Sweden. A key strength is that the author himself is an Arabic-speaking immigrant with own experiences of utilizing digital and traditional primary healthcare in Sweden. The fact that no interpreter was needed facilitated creating trust with the study participants making them comfortable in sharing their experiences and also to be critical to the Swedish health care systems.

A limitation of the study is that it was hard to reach parents that had used digital PHC for their children. Parents are considered to be one of the largest group users and is represented by only one participant in the sample. In this study, the author chose to include those who had been in Sweden for not more than five years. The results could potentially be different if participants had resided longer in Sweden and were more integrated into the system. Their digital literacy and Swedish skills may be higher which means they would not share the same challenges and limitations observed among the participants of this thesis study.

5. Conclusion

This study shows that digital PHC can be seen as a potential solution for the challenges that immigrants encounter at traditional PHC clinics. However, depending on the chosen digital PHC provider, digital literacy and different Swedish skills are necessary. Only one digital PHC provider offers consultations in several languages, which makes it the only feasible digital option for immigrants who struggle with the Swedish language and need healthcare. However, accessing this application still requires basic skills in Swedish/English and digital literacy, making access inequitable. In addition, even those with digital literacy and basic Swedish/English skills still have challenges in reporting their cases since it demands Swedish/English proficiency. The study also illustrates that digital PHC works well only for uncomplicated cases, which makes digital PHC a complement but never a substitute to traditional PHC.

Considering the limitation of this study, further studies are however needed to explore the use of digital PHC services among other immigrant groups and to include those residing in Sweden for

more than five years. Moreover, further studies should explore the specific experiences of parents with immigrant's background who seek digital PHC for their children to get a fuller picture on the use of digital PHC by a wider segment of immigrants.

6. References

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Tables

Table 1: Participant's socio-demographic characteristics

Informant	Gender	Country of origin	Age	Years lived in Sweden	Education	Occupational status	Technology literacy	Swedish Level	The amount of time digital app used in the past 12 months	Health status
1	Male	Syria	27	3 years	High school	Employed	High	SFI- D	2	Chronic disease
2	Female	Syria	20	3 years	High school	Student	High	SVA3 (highest level in Swedish)	1	No chronic diseases
3	Female	Syria	37	5 years	University	Unemployed	High	SFI-C	2	Chronic disease
4	Male	Iraq	47	1 year	Elementary school	Unemployed	Low	SFI-B	1	No chronic diseases
5	Female	Palestine	32	3 years	University	Unemployed	High	SFI- D	1	No chronic diseases
6	Female	Yemen	36	4 years	University	Employed	High	Grundläggande 1 (beginner's level at the intermediate Swedish)	1	No chronic diseases
7	Male	Syria	54	1 year	Elementary school	Unemployed	Low	SFI-B	1	Chronic disease
8	Male	Syria	36	4 years	University	Unemployed	High	Grundläggande 4 (highest level at the intermediate Swedish)	1	No chronic diseases
9	Male	Syria	33	5 years	High school	Student	High	SFI- D	2	No chronic diseases
10	Female	Egypt	33	4 years	University	Unemployed	High	SFI-C	1	No chronic diseases

Table 2: An example of the analysis process from text to themes

Meaning unit	Condensed meaning unit	Codes	Sub-categories	Category	Theme
When it comes to reporting a case, I think they made this section really easy to navigate through it. They even have put a list of animated icons related to different conditions. In my opinion, those icons really help the person to be able to identify where to go quickly. It was easy for me to find the skin picture, I clicked on it. Then an automated machine started asking me questions. I believe nurses are being replaced with machines now.	They made the reporting section easy to navigate through. There is a list of animated icons, which really helps the person to identify the condition quickly. I clicked on the skin picture, then a machine started asking me questions. Now, nurses are being replaced with machines.	Making the reporting section easy to navigate Finding the animated icons very helpful to identify the reported condition Replacing nurses with machines	**Finding the machine user-friendly**	**Being triaged by a machine works both ways**	**Resembling a roller coaster ride, enjoyable to those who can make it, but only for a while**
The machine was offered in Swedish and English. For me, I do not speak English but as I told you before, I speak little Swedish, when I say little, I mean it is very basic Swedish. Considering this background, I had to choose Swedish, the machine started to ask me questions in Swedish. It was a bit challenging, I understood some questions, other questions I had to translate through google.	The machine was offered in Swedish and English. I do not speak English but I speak basic Swedish. Therefore, I had to choose Swedish. It was challenging, I understood some questions, other questions I had to translate through google.	Machine being offered in Swedish or English Speaking basic Swedish Finding reporting in Swedish challenging Translating questions through google	**Needing translation help**		

Table 3: Overview of the findings describing content areas, sub-categories, categories, and themes

Content areas	Sub-categories	Categories describing the manifest meaning	Themes interpreting the latent meaning
The driving forces/motive behind using digital PHC services	• Experiencing long process and time to receive care • Questioning Swedish HCW's capabilities • Seeing language and interpreters as obstacles	Traditional PHC- not meeting the health needs	**Turning obstacles into advantages**
	• Being forced to new solutions by the COVID-19 pandemic • Getting immediate appointments without interpreters • Appreciating continual availability	Digital PHC-disrupting the paradigm of traditional PHC	
Using the app at different stages			
Accessing the application	• Demanding digital literacy • Requiring basic skills in Swedish or English • Needing a computerized I.D verification	Providing equal but not equitable access	**Resembling a roller coaster ride, enjoyable to those who can make it, but only for a while**
Deciding where to seek care	• Having the ability to self-assess the case • Understanding that digital consultations are not for serious cases • Being reminded to consider the need for emergency care	Demanding high self-confidence	
Reporting the case	• Finding the machine user-friendly • Acknowledging the potential time benefits • Appreciating the non-human aspect • Expecting high matching possibilities • Needing translation help	Being triaged by a machine works both ways	
Meeting the digital doctor	• Whether having long or rushed consultations, it solved mild problems • Consulting for complicated cases can be a terrifying experience • Feeling safe & confident about the prescription process and treatment • Finding referral system to other healthcare providers both convenient and inconvenient	Satisfying but only for uncomplicated cases	
The future use of digital PHC	• Needing more available languages in the application • Suggesting specialization background in all lists of doctors	Becoming increasingly equitable and informative	**Seeing a glass half-full of opportunities**
	• Envisaging potential time and money savings • Seeing themselves as future users for uncomplicated cases	There is a possibility in every limitation	

Appendices

Appendix 1 – Interview guide

Introduction

Explain the interview process, the aim of the project, and go over the information letter again. Ask if there are any further questions?

Start recording the interview and request for a consent by the informant.

Background information

- Can you please tell me about yourself? (e.g. demographic characteristics)
- What does good health mean to you?
    - How do you perceive your health?

Motives behind using digital primary healthcare

- Can you please share with me about your overall experience of visiting the traditional primary health care center?
- How come you decided to try out the digital primary health care?

Meeting the application

- Which telehealth application have you used e.g. Kry, Doktor.se, Doktor24, Min Doktor, or some other similar application?
- What is special about this/these application/s?
- How did you hear about the application/s?

Using the application

- Can you please describe for me the process of downloading the application and setting up your account?
- How do you self-assess that your case suits a digital consultation?
- Can you describe the process of reporting your case in details?
- How did you find the interaction with the digital healthcare worker?
- Can you describe your overall experience in regard the digital doctor's diagnosis?
- How did you experience receiving a medication through digital healthcare consultation?
- How would you reflect on your digital consultation in terms of meeting your care need?
- How often do you use this service?

Future Use

- How can digital primary healthcare applications enhance its services?
- How would you describe the healthcare application to your friend?
- Where do you see yourself in terms of using the application in the future?

The End

- (Sum up what has been said and share my interview guide)
- I do not have any further questions, is there anything else you would like to share with me that you think it's important and I have missed to cover it!
-

End Recording

If I have more questions or need some more answer clarification in the future, do I have the chance to contact you?

Appendix 2 – Interview guide, mind-map

Introduction

- **Explain the interview process & aim of the study**
- **Go over the information letter**

Begin Recording

- *Ask for consent*

Background

- **Ask about demographic characteristics & health perception**

Motives behind using digital PHC

- *Understanding traditional PHC experiences*
- *Understanding behind the decision of seeking digital PHC*

Meeting the application

- *Understanding more about the application used: selection & uniqueness*

What are the perceptions and lived experiences of Arabic-speaking immigrants using digital primary healthcare applications?

Using the application

- *Describing the use of every stage before meeting digital HCWs*
- *Understanding the interaction with digital HCWs*
- *Probing deeper on the overall experiences during and after consultation*

The End

- **Sum up what has been said**
- **Ask the informant if they would like to add something I have missed**

STOP RECORDING

Ask informant if I can get back for

Future use

- *Understanding if there is a need for app enhancement*
- *Understanding the future potential use of digital PHC*

Appendix 3- Information letter and invitation

LUNDS UNIVERSITET

Information letter and invitation

This is an information letter and an invitation to participate in an interview about the use of digital primary health care applications in *Scania,* Sweden among Arabic-speaking immigrants.

About the interviewer:
My name is Wasim Jabari and I am a Master of Public Health student at Lund University. To understand more about the use of digital primary health care services, I will carry out interviews to collect data for my master thesis project. The purpose of the interview is to understand how Arabic-speaking immigrants experience the use of digital primary healthcare services through mobile applications e.g. (KRY, Doktor.se, Min Doktor, Doktor24, CapioGo or any similar platform) in *Scania*, Sweden.

Information about the interview:
The interview is estimated to last for about an hour and will be conducted in Arabic. The topic of the interview will focus on your experience of using digital primary health care application with your reflection on the challenges and successes of such consultations. Considering the current corona situation, the interview will be conducted through a digital platform called "Zoom" and you will get a link to join a video call. You will be requested to give an oral consent once the interview begins. The interview will be recorded after your approval as a basis for analysis. The results will be presented in a Master thesis presentation's session at Lund University.
The interview follows the guidelines of the research ethics. This means that participation is voluntarily and you have the right not to answer questions you do not want to answer. You also have the right to withdraw at any point during the interview. It is important to reassure you that your identity and all your answers will be kept completely confidential throughout the entire process of data collection, analysis and presentation of results. The data will only be accessible to the interviewer and the supervisor during the thesis period. The recorded data will be password-protected and deleted at the end of the course in June 2021. Please feel free to ask any questions before, during, or after the interview if you have any concerns or want a further clarification.

If you would like to participate in an interview or have a question, please feel free to contact me via email or phone. My contact information is listed below.
Wasim Jabari, master student in Public Health, Lund University
E-mail:wa3527ja-s@student.lu.se
Phone no: 0720142535

Appendix 4 – Popular science summary

Many Swedish studies reported that different socio-economic groups, particularly immigrants are being disadvantaged in accessing and receiving equal care within the traditional Swedish primary healthcare (PHC) centers. The use of technology in health, like the internet and mobile phones, are considered very promising in tackling challenges like equity, healthcare accessibility and the increasing cost of healthcare. Digital primary healthcare in Sweden has been growing rapidly since it started in 2014. The concept of utilizing digital primary healthcare has become increasingly accepted because of the COVID-19 pandemic, where in 2020 the total number of digital consultations in Sweden, doubled when compared to 2019. However, digital primary healthcare is in its infancy stage, where there is little known about the personal experiences of non-Swedish speaking immigrants, using digital primary healthcare within Sweden. Therefore, this thesis study was conducted to understand what the introduction of digital primary healthcare means for Arabic-speaking immigrants in Scania, Sweden, and to discuss the potential of digitalization in improving access to primary healthcare and health equity. The Arabic group was chosen because they are one of the largest immigrant groups in Sweden.

This thesis study found after analyzing ten individual interviews that digital primary healthcare offers possible solutions to the challenges experienced by immigrants at traditional primary healthcare in Sweden, but the digital model has its limitations in terms of accessibility and usage. Offering consultations with clinicians that can speak specific languages improves access for immigrants who cannot speak fluent Swedish. However, accessing the applications requires basic Swedish/English and digital literacy, and proficiency in Swedish/English in the reporting section, depending on the selected provider. Providers who offer their services only in Swedish require an advanced level of Swedish to meet a digital doctor. Digital primary healthcare is well suited for mild medical conditions only, which means that traditional primary healthcare and digital primary healthcare complement each other.