TALLINN UNIVERSITY OF TECHNOLOGY
School of Information Technologies
Department of Health Technologies

Hanna-Maria Trei 204749YVEM

HEALTH COMMUNICATION TOOLS IN SUPPORTING MEN DURING THE ANTE- AND POSTNATAL PERIOD

Master´s thesis

Supervisor: Kadi Lubi
PhD
Co-supervisor: Barbara Haage
MA

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TALLINNA TEHNIKAÜLIKOOL
Infotehnoloogia teaduskond
Tervisetehnoloogiate instituut

Hanna-Maria Trei 204749YVEM

MEESTE TOETAMINE ANTE- JA POSTNATAALSEL PERIOODIL TERVISEKOMMUNIKATSIOONI VAHENDITEGA

Magistritöö

Juhendaja: Kadi Lubi
PhD
Kaasjuhendaja: Barbara Haage
MA

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Author’s declaration of originality

I hereby certify that I am the sole author of this thesis. All the used materials, references to the literature and the work of others have been referred to. This thesis has not been presented for examination anywhere else.

Author: Hanna-Maria Trei

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Abstract

Background: The contemporary approach to the ante- and the postnatal period calls for greater participation of men and by men themselves. Despite this, men feel left out of the antenatal and postnatal process. Even though national health politics have described a necessity for implementing a person-centred approach, it is not clear if and how it manifests in reality. Adequate information communication and engagement of men during the antenatal and postnatal period have been described to have a positive impact on the overall health status of women, men, and their children. **The thesis aimed** to identify information sources men in Estonia currently rely upon regarding the ante- and postnatal period, both to understand possible areas of development and the potential application of health communication tools to support men in ante- and postnatal care. **Methods:** A qualitative study was conducted during which 13 interviews were conducted with men who met the inclusion criteria. Directed content analysis was performed to explore collected data. **The results** were divided into three categories – societal influence; currently used information sources and expectations regarding information sources. Men felt a sense of their attitudes towards parenthood being influenced by surrounding social norms. Despite the new standards, there are no targeted support systems in place to address men´s information needs. Men turn to the Internet for information, but require advanced skills in source criticality, languages, health and digital literacy. The COVID-19 pandemic has more than ever highlighted the necessity of developing a systematic approach for supporting men. This could be resolved through conscious use of health communication tools, which must be person-centred in their form – easily found, user-friendly and logically structured. **Conclusions:** In reality supporting men during the ante- and postnatal period is not based on person-centredness, so a systemic approach has to be developed to further support men. Health communication strategies can mediate such an approach by being able to accommodate to a wider range of skills and preferences.

This thesis is written in English and consists of 57 pages of text in the main body, which include 6 chapters, 4 figures and 1 table.

Annotatsioon

Meeste toetamine ante- ja postnataalsel perioodil tervisekommunikatsiooni vahenditega

Taust: Tänapäeval on välja kujunenud uued normid meeste osavõtule ante- ja postnataalsel perioodil nii meeste endi kui ka ühiskonna silmis. Sõltumata muutunud ootustest tunnevad mehed end kõrvalejäetuna. Kuigi riiklikus tervisepoliitikas on kirjeldatud suundumist inimkesksele lähenemisele, pole selge, kuidas ja kas see reaalsuses väljendub. Adekvaatset informatsiooni kommunikatsiooni ja meeste kaasamist on uuringud kirjeldanud positiivse mõjuna meeste endi, naiste kui ka nende laste tervislikule heaolule. **Uurimistöö eesmärk** oli tuvastada, milliseid informatsiooniallikaid kasutavad mehed Eestis ante- ja postnataalsel perioodil, mõistmaks nii võimalikke parenduskohti kui ka tervisekommunikatsiooni vahendite rakendamise potentsiaali meeste toetamisel. **Metoodika:** Tegemist on kvalitatiivse uuringuga, mille käigus intervjueeriti 13 meest, kes vastasid uuringusse kaasamise kriteeriumidele. Andmete analüüsimiseks kasutati deduktiivset suunatud sisuanalüüsi. **Tulemused** jaotati kolme gruppi – ühiskondlik mõju; hetkel kasutatavad informatsiooniallikad ja ootused informatsiooniallikatele. Mehed kirjeldasid, et nende hoiakud lapsevanemaks olemise suhtes on osaliselt mõjutatud ümbritseva ühiskonna normidest. Vaatamata uutele standardeile puudub hetkel suunitletud tugisüsteem, mis toetaks meeste infovajadusi. Informatsiooni saamiseks kasutatakse Internetti, kuid selleks peab olema kõrgem digitaalne võimekus, tervisealane kirjaoskus, allikakriitilisus, võõrkeelteoskus. COVID-19 pandeemia on esile tõstnud vajaduse kujundada süstemaatiline lähenemine meeste toetamiseks. Terviskommunikatsiooni vahendite kasutamine võimaldaks inimkeskse käsitluse rakendamist, olles sealjuures kergesti leitavad, kasutajasõbralikud ja loogilise ülesehitusega. **Järeldused:** Meeste toetamine ante- ja postnataalsel perioodil ei ole praktikas inimkesksuse strateegiast lähtuv ja vajab süsteemse käsitluse väljakujundamist. Tervisekommunikatsiooni strateegiad võivad olla vahendavaks lüliks selle saavutamisel, olles kohandatavad meeste eelistustele ja erinevatele oskuste tasemetele.

Lõputöö on kirjutatud inglise keeles ning sisaldab põhiosa teksti 57 leheküljel, 6 peatükki, 4 joonist, 1 tabelit.

List of abbreviations and terms

Antenatal	Medical care provision before babies are born [1]. Also known as prenatal care [2], pregnancy care [3].
eHealth	The use of digital information and telecommunication technologies which include computers, the Internet, mobile devices, and applications to provide healthcare services and to support health development [4].
HCP	Health care provider
Health communication	The study and application of communication tactics to advise and affect individual and public knowledge, attitudes and practices with regard to health and healthcare [5],[6].
Maternity care	A collection of healthcare related services provided to a woman and her family which includes care during the antenatal, delivery and postpartum period [2],[7].
OECD	Organisation for Economic Co-operation and Development
Patient portal	A mode of communication between people and healthcare service providers with capabilities spanning from access to select health information to patient education materials, supporting advised decision-making, engagement and patient management [8],[9]. The Estonian equivalent being the website digilugu.ee [10].
Perinatal	Something happening or having to do with or occurring around the time of the birth of the child [11].
Postnatal	The period taking place after the birth of a baby [12].
WHO	World Health Organization

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1 Introduction

The contemporary approach to the ante- and postnatal period expects an increased amount of participation from men [13]. This manifests as men themselves wish to be more actively present already at the beginning of their partners´ pregnancies [14] and their children's early years [15]. With that in mind, men currently say that even though expectations on their participation have changed, the amount of information and support available to them still ranges from limited to in some ways non-existent [16]. Provision of care during childbearing and child raising, both from the historical and social aspects, has seen women as the main counterpart. Men have traditionally been overlooked or thought of as an afterthought during the antenatal and postnatal phases. Yet, more and more researchers are recognizing the significance of engaging men not only during the birth, but in the course of the pregnancy and afterward as well. [17]. The World Health Organization (WHO) has described the necessity of specialists supporting soon-to-be fathers in gaining reputable information which is directed at them [18]. At the same time, previous studies have found that men overlook their needs out of fear of taking attention away from their partners [19].

With the prevalence of implementing person- and family-centred care principles in all fields of healthcare [20], including maternity care, the provision of a more holistic and inclusive approach has the potential to improve the way men are engaged during the ante- and postnatal period as well. It has to be kept in mind, that expectations for men's participation differ across the world based on social norms in different countries [21]. In regions where the demand for men's participation is present, it is often matched with an inadequate amount of engagement opportunities that do not meet the men's needs [22]. Studies conducted in different parts of the world, such as Sweden and Singapore, show similar results in the sense that even though men rate information availability directed at them to be scarce, they most often turn to the Internet to gain information [13],[23]. Thus, when looking for ways on how to better engage men, health communication tools and digital solutions should be regarded as an additional medium to harness. Adequate information access and engagement of men during the ante- and postnatal period has been

found to improve long-term outcomes for the women, men themselves and their children [17],[24]. Now, with the ongoing COVID-19 pandemic, the issue of limited engagement and information availability for men is being highlighted more than ever, as men have felt more isolated because of the restrictions imposed on maternity care provision. Understanding people's experiences helps create change in service provision and how healthcare services are designed. [25].

Even though previously conducted research into the topic of men's information needs and engagement during the ante- and postnatal period have found similar results describing low support levels for men, [23],[24],[26],[27],[28] these studies cannot be fully equated to other countries. Each nation has to take into account the region, people´s cultural backgrounds, the national capabilities and other social factors that determine how to best improve men's participation during the ante- and postnatal period by conducting their own research [24]. To the best of the author´s knowledge there have been no studies focused on men's information needs and engagement during the ante- and postnatal period conducted in Estonia, despite previous research indicating the importance of such studies. Research conducted in Estonia in 2015 focused only on how to engage men during the delivery process, in which the results emphasized that specialist have to turn more attention to men's needs during the delivery [29].

Research problem: Despite the shift in social norms on men's participation [13], the promise of a family-centred approach in maternity care from service providers [30], and an apparent abundance of information available on the Internet, men still feel left out and isolated when it comes to being a part of the ante- and postnatal care process [21].

The aim of the research is to identify information sources men in Estonia currently rely upon regarding the ante- and postnatal period, both to understand possible areas of development and the potential application of health communication tools to support men in ante- and postnatal care.

Research questions:

How do men in Estonia perceive social expectations with regards to their involvement during the ante-, postnatal period and its effects on topics they consider important?

How do men in Estonia currently describe gaining information regarding the ante- and postnatal period and the effect of the COVID-19 pandemic to their experiences?

What expectations do men have for health communication tools to support their information needs and engagement during the ante- and postnatal period?

2 Theoretical framework

The present chapter stems from a literature overview and sets the theoretical framework of the research. As this is a study on the experiences of men during their partners ante- and postnatal period, the present chapter discusses the relevance of certain core care concepts and approaches. The topics reviewed explain the reasoning for the necessity of the study and the themes discussed during the interviews.

2.1 Men and the ante- and postnatal period – learning from theory

This sub-chapter focuses on care concepts relevant to the topic of men's information needs during the ante-and postnatal period, how those concepts correlate with how people are engaged in healthcare and how improvements could be made. The following includes an overview of patient- versus person-centred care, family-centred perinatal care, person and family engagement.

2.1.1 Patient- versus person-centred care

Involving people in the healthcare process has become an important part in offering quality healthcare. Both the patient- and person-centred care concepts have been created to move past the previous care model of being disease-centred [31]. Despite the similarities of patient- and person-centred care concepts, a distinction has to be made between the two [32]. There are no universally agreed upon definitions for either of the terms [31].

Patient-centred care „*is an approach of viewing health and illness that affects a person's general well-being and an attempt to empower the patient by expanding his or her role in the patient's health care. Enhancing the patient's awareness and providing reassurance, support, comfort, acceptance, legitimacy, and confidence are the basic functions of patient-centred care*" [33]. Other available definitions follow generally the same lines, some also elaborating on the importance of creating collaborative relationships between the patient and healthcare professional [31].

As defined by McCormack *et al.* person-centred care is "*an approach to practice established through the formation and fostering of therapeutic relationships between all care providers, patients and other individuals significant to them in their lives. This type of care is reinforced by values of respect for persons, individual right to self-determination, mutual respect, and understanding*." [34]. A person-centred approach to care is an advance over patient-centred care because it places the individual at the centre of the care plan, considering their life context, their loved ones, and their situation [32]. The person is no longer viewed as a passive, but an active stakeholder and there is a clear distinction made between personhood and the patient-role [35],[36] as shown in Figure 1.

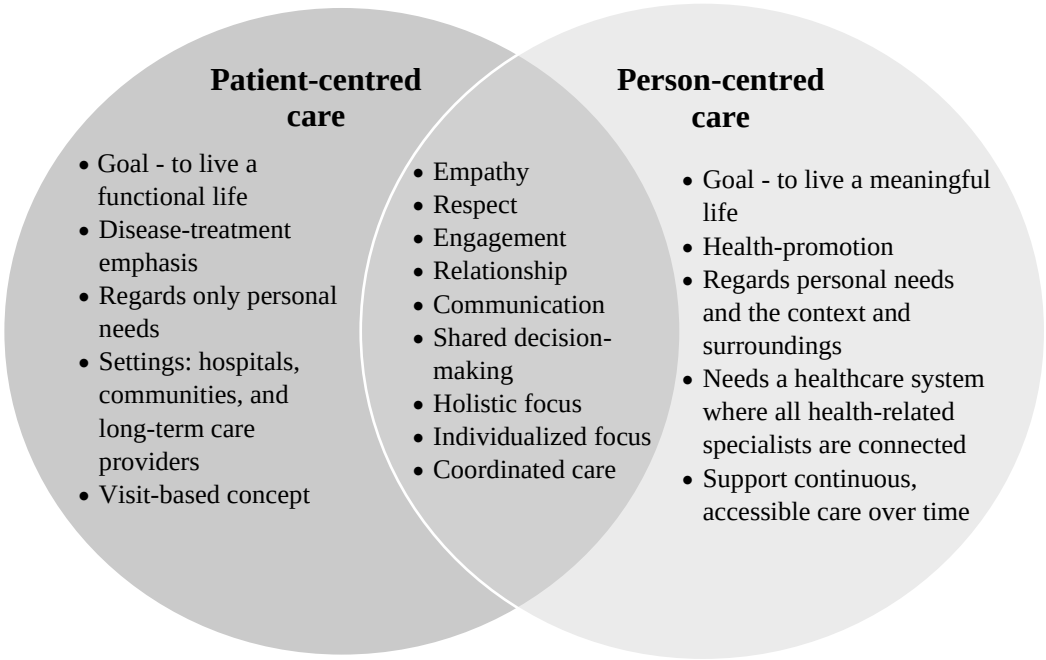

Figure 1 Patient-centred care versus person-centred care comparison and common traits (modified) [31],[32].

As seen in figure 1, the main difference lies in the focus of the approach. While patient-centred care places a disease at the centre, person-centred care places the focus on an individual. The Estonian Ministry of Social Affairs has named person-centredness and adaptation of innovative approaches as cornerstones in implementing the Public Health Development Plan for 2020-2030 [37]. However, in 2017 the OECD (Organisation for Economic Co-operation and Development) stated that even as digital solutions have made access to health information easier and people are more actively involved in decision-making, that alone will not make care models more person-centred if health related

information continues to be difficult to navigate [38]. For person-centred care models to work, attention must be drawn to the necessity of developing both people's health and digital literacy skills [38], as well as to the implementations of innovative user-friendly solutions to tackle current healthcare challenges [37]. Otherwise, those who are lower educated are at a risk of poorer health literacy and at a higher risk of health inequality [38].

As this study focuses on supporting men during the ante- and postnatal period, care concepts prevalent in maternity care provision must be discussed and men´s involvement in them. A study done in the United States described principles of patient-centred care being the focal point of any type of care provision not so long ago [39],[40], the recent decade indicating to need to move from patient-centred care to person-centredness [39]. The obstetric branch of medicine has rather recently been found to be in an ideal position to not only follow principles of person-centred care but define what person-centred care should stand for [41],[42]. What sets maternity care apart from other medical fields is that most often care provision deals with people who are going through a fully physiological and natural life event [39]. Though, in order to make sure that everything is going as it should be, maternity care has become tightly connected to healthcare service provision [39]. These characteristics allow maternity care to be a unique vessel for person-centred care as providers of obstetric and midwifery care have always understood that both pregnancy and the birth are an experience far from only being a set of procedures or a diagnosis needing a cure [41],[42]. Next to focusing on the mothers, the familial elements of maternity care also create a forum for involving family members - the partners [43]. Currently, men are still describing being left in a so-called grey area, where they cannot be considered a patient nor are they merely a visitor [44]. Indicating, that person-centred care in maternity care, even if applied, currently caters to the mothers, but has the potential to support men on an individual level as well.

2.1.2 Family-centred perinatal care

In maternity care provision, the concept of person-centred care folds into family-centred care as separate individuals form a unit – a family. Family-centred perinatal care is defined as "*care offered to the woman and her supportive family members that is evidence-based, psycho-socially sensitive, multi-culturally adapted, inter and multi-disciplinary and utilizing only essential and appropriate technology*" [30]. Family-

centred versus person-centred care brings more attention to the support system by incorporating in itself care for all who a person considers as a significant other in their journey [30],[45] as can be seen in Figure 2.

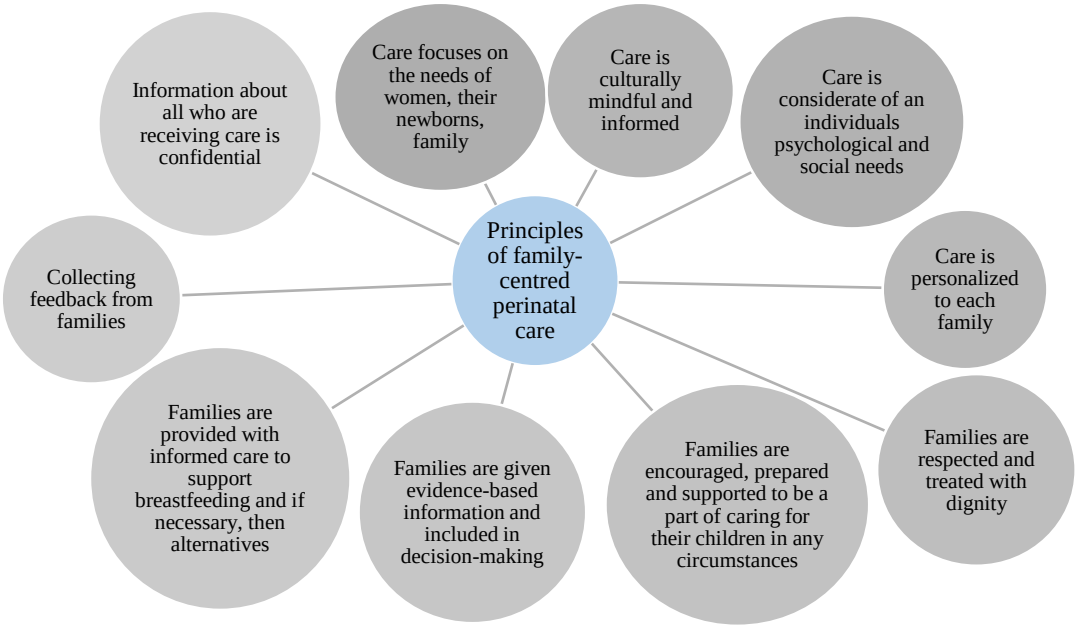

Figure 2 The 10 principles of family-centred care (modified) [30].

Family-centred perinatal care specifically names the need to focus on how to engage men [30],[45] in this unique state of medical services and a normal physiological process coming together.

Based on the definition of family-centred perinatal care, the current provision of support during pregnancy, birth and the postpartum period should leave little room for improvements [30]. After all, care is based on guidelines, which are evidence-based [30] and the level of including a person's wishes in healthcare provision has seen an increase in relevance as years go by [46]. In reality there is still work to be done to actually claim that care offered during the ante- and postnatal period is family centred [30]. One of the aspects mentioned about family-centred perinatal care is the need of truly integrating men into the maternity care process, which is currently well defined on paper, but in real-life needs actual change [30] to allow for a more natural and dynamic approach, since it considers both the needs of the women and the men in equal measure.

As described in the national guidelines for family-centred maternity and newborn care in Canada, men's participation has seen an increase during the ante- and postnatal period,

but is met with a limit in assistance on how to adapt to their new role and position [45]. Referring to a low number of previously conducted studies on paternal involvement during pregnancy and its benefits [47], the Canadian guidelines also highlight how men have their own needs that require attention and a higher level of care when they, like their partners, are transitioning into parenthood [48]. The same Canadian guideline and other studies are also urging the need for added research when it comes to what men are experiencing [39],[45]. The importance of men's preparation not just for the birth, but for other stages of maternity care cannot be underestimated [30].

2.1.3 Person and family engagement

While patient-, person- and family-centred care are considered to be theories, person and family engagement are the methods of approach necessary to fulfil these theories to reach the final step – the actual lived experience [49]. The difference being that person and family engagement goes further than the previously mentioned concepts of care by including partnerships in organizational design, administration and in creating policy changes [50]. The higher-level responses being required in order for progress to be made on an individual and a collective level [51]. The word "engage" has a myriad of definitions but in the healthcare provision context it refers to a "*dynamic and relational context, in which two parties agree on the goals of an action and on the phase of its process*" [52]. A primary aim of engagement is to bring about more understanding of the healthcare delivery process, and to give the person receiving care a principal role and more responsibility to achieve a more efficient process of care provision [52].

When people receiving care and their family members get engaged by becoming partners to healthcare professionals, the level of informed choices, correct medication use, observation of care processes, reporting of complications and practicing self-management increase, all of which contribute to the rise of quality and safety of care [53]. The main issues currently with implementing the person and family engagement concepts have to do with low health literacy, health care professionals' education and attitudes [54], lack of additional resources and information, lack of training on person and family engagement at the specialist and organizational level [55]. Understanding these barriers is a step forward in finding ways to bring change to the way healthcare provision works.

To tackle these shortcomings in person- and family centred care, engagement tactics based on care theories must be improved. Three main categories of improvements on how to better engage people and families have been suggested based on previous research. Those being education of people receiving care, their families and HCPs, obtaining retrospective or real-time feedback, and working on improving systems or services [54],[55]. To facilitate people's education and engagement, the use of different health communication methods are offered as a solution [54],[56]. For people receiving care and their families to gain access to these materials and tools, HCPs have to be educated in the field as well and offer these solutions in practice [54]. Otherwise, the sources exist without reaching the users. Feedback is another important method of bettering people and families' engagement since it allows for the gathering of unique data not available otherwise [54]. This allows for better outcomes for created materials. The success of the latter is dependent on how feedback is collected, how reliable it is and what is done with the feedback after it is collected [54]. By taking feedback seriously and putting it to use people will notice their opinions to have an actual effect on systems and improved practices – being the third main category of development [57].

2.2 Men and the ante-and postnatal period – current reality and how to improve it

This sub-chapter delves into men´s participation during the ante- and postnatal period and the effect of the COVID-19 pandemic to their experiences, information availability supporting men´s needs, use of health communication tools to engage men in ante-and postnatal care.

2.2.1 Men's participation during the ante-and postnatal period and the effect of the COVID-19 pandemic to their experiences

In high income countries the change in how men engage in the pregnancy, birth and postpartum period started after World War II, after which giving birth in a hospital began to rise as a trend in the next few decades [58]. From men only accompanying women to give birth, it has now become common for them to take part in all instances of maternity care including the ante- and postpartum period [59]. However, it should be noted that social attitudes, cultural settings and also personal predilections all influence demand for

men's participation [21]. All of which have to be taken into account as key factors in deciding on what types of services and support are necessary for men [21]. Views on the extent of men´s engagement are noticeably different in low to middle income countries compared to high income countries, where men are more willing to take part in maternity care but face a so-called barrier in supply [21],[60]. So, even though men seek to be a part of the family-centred care model, it is not matched by a necessary number of opportunities to be engaged, which would fulfil the men's own need for support [22].

Research has shown that although men have become a part of the maternity care process, studies directed at specifically men's experiences and their needs are rather rare to come by in comparison to the amount of information available from the women's perspective [19]. Indicating to a lesser amount of interest towards men´s involvement. An absence is noted of current materials created with men in mind and the lack of a support system directed at taking care of their needs when becoming a parent and being one [16],[19]. Men found the few forum-like sources involving them to be "jokey" in nature which was not what they were looking for or in need of as instead many were only looking to gain the notion that things are fine or will get better [19]. When talking about the availability of services which would facilitate creating a kind of a support system for men, an inventory in Canada which collected services provided to men found only 13% (N = 78/613) to offer support directed at men [61]. A point was made that a number of institutions use the term "parent" to make services appear to be inclusive, with the final product still being focused at women [62].

The World Health Organisation has indicated the importance of professionals helping prospective fathers get reliable information and support, which is directed at them [18]. This is due to the fact that a presence of a supportive and informed man helps improve long-term outcomes for the mother, father and baby [24] – such as improved "*fetal growth, infant and childhood development, health and social well-being*" [17]. Later, a healthy father-child relationship is associated with a lower level of child abuse [63] and improved outcomes in child development [17]. In the previously mentioned Canadian study, men who described themselves as feeling engaged in the ante- and postnatal care process, highlighted being asked questions that centred around them. During the antenatal period men appreciated situations where service providers explained what men might go through psychologically to their partners [62]. Showing how it was important for men

that their partners understood them. In the postnatal period engagement was felt when healthcare professionals instructed the men to participate in childcare procedures such as bathing the child [62]. That created a sense of involvement and care being person-centred. Men who reported lower levels of engagement described the feeling of being excluded or not recognized at all [62]. The described feelings were attributed to the general lack of public discussions which would encourage men's engagement and participation [62]. Open debates seemingly being deemed necessary to evoke change. One participant interviewed stressed the fact of how men have been condemned for years for not being in attendance, but now when they actually are, it feels like the system has never been ready for them [62].

The last two years have seen how the COVID-19 pandemic has changed the way healthcare is provided [25]. The same applies for people and families receiving maternity care, as rules had to be adjusted to ensure safe environments for everyone and a sustainable workflow for medical staff during unknown times [64]. For maternity care provision adjustments meant restricted family access to antenatal check-ups, the birth of the child and staying in the family rooms of the hospital during the postpartum period [64]. Even though changes were implemented with the best of intentions, initial research conducted on the impact of the COVID-19 pandemic in maternity care has described the changes to be disruptive [25].

A study conducted in Australia investigated experiences of maternity care provision during the COVID-19 pandemic considering different stakeholders, also focusing on the encounters of men [25]. The research team mentioned that during the process of their work, there was no available empirical data on the experience of men during the pandemic. What Australian researchers did find, were notes from Italian neonatal specialists [25], which showed the level of worry experts had early on to the effects COVID-19 restrictions might have on men [65]. The Australians own study results confirmed that men felt more isolated because of COVID-19 rules [25]. Showing the restrictions put in place having a strong impact on care provision. The study did mention the limited number of research conducted during the pandemic to compare its results to, but indicated to studies done previously [25], which described men feeling left out already in normal circumstances [66] as made evident by studies mentioned previously. Based on

this, it is assumed by the Australian researchers that the COVID-19 situation has only made the situation worse [25].

2.2.2 Information availability supporting men's needs

Understanding the scope of information availability and information needs of men during the ante-and postnatal period have been at the centre of research in many countries in recent years regarding lack of knowledge when it comes to pregnancy, birth and the postpartum period from the men's perspective [23],[24],[26],[27],[28]. As the men's role becomes more significant, so do the expectations that they set themselves and which are set by others [16]. To try to meet those expectations soon-to-be fathers try their best to be prepared [16].

Previous research conducted in Sweden on factors influencing men's involvement in their partner´s pregnancy indicated that fathers often feel neglected and that there is not enough information directed at their role, which in turn hinders their participation in the process [67]. Men say that there are so-called casual ways for them to gain support, be it their friends and family, or peer support groups, but antenatal classes only seem to help prepare for the birth, failing to address other more general topics [19]. Therefore, in case of information shortages research shows that men most often turn to the Internet [16],[68].

Most commonly men use the Internet to try to find information on the pregnancy and read about other people's experiences [23]. A study conducted with fathers-to-be in Sweden found that a number of men looked up pregnancy related info on a weekly basis and most each month. [23]. However, even the Internet is considered to mainly consist of information directed at women, as men find little that is geared towards them [19]. Even though the web has its advantages when it comes to easy and quick access to information, there are disadvantages to be considered as well. Among them is the possibility that anyone has the opportunity to write information, making it difficult for parents to differentiate between credible and uncredible sources of information [23]. The Swedish study showed more than half of the participants to be concerned about what they had read on the Internet [23]. There is a need for digital or web-based solutions created by health professionals, which would include reliable information on fatherhood covering a range of topics [13].

Based on the previous themes discussed, it can be established that having men participate in the ante-and postnatal period in addition to the birth brings better long-term outcomes for all involved. However, as previously conducted research shows, the level of information and engagement opportunities available for men are rated to be of low quality and accessibility [19]. Alio has stated in his 2017 strategy for men´s participation in the ante- and postnatal process that to create a service to the final user it is necessary to ask the right questions from the right people. To engage men in particular, suggestions are given to understand the target audience, to create a space that is welcoming to the men´s participation, where they feel included and where professionals have been provided with the right tools and education to engage them [17]. Those steps are followed by creating an outreach strategy, which must start with an engaging message and include supportive activities that at the same time acknowledge what resources are already available. The last step involves constantly gathering feedback [17].

2.2.3 Using health communication solutions to engage men in ante-and postnatal care

Topics discussed in previous chapters touched upon themes such as men feeling isolated during the provision of ante-and postnatal care and demonstrated how men meet a set of barriers which hinder their participation.

Health communication (HC) uses communication strategies to influence people's knowledge and attitudes, be it individual or group based, as communication strategies have come to include digital technologies, they are able to help improve health promotion through a multilevel approach [6]. Based on this attribute, HC can be considered as a mediator to tackle barriers, which men encounter while trying to engage during the ante-and postnatal period. Implementing a multitude of communication channels facilitates sharing health messages with the aim of shaping attitudes on the personal, close circuit and societal level [69]. HC, if equipped in the correct manner, can reinforce positive behaviours, influence social norms, increase availability of support and needed services, empower people to change or improve their health status [69].

eHealth solutions are seen as the possible way to better information availability for men and help support their engagement [68],[70], being one of many communication strategies in healthcare. eHealth entails the use of digital information and

telecommunication technologies which include computers, the Internet, mobile devices, and applications to provide healthcare services and support health development [4]. The nature of eHealth also offers a possibility to get through to harder-to-reach populations, which in this case are men participating in different stages of maternity care provision [56] such as men whose participation is or would be hindered because of work or the family living in a smaller region with a limited level of service provision.

A website demo directed at men was tested in the United States, which covered the span of both the ante- and postnatal periods and included a myriad of topics in preparation for parenthood which could be interesting to them [56]. The results found that men considered the website useful with three quarters of the participants saying they would use it and recommend it to others [56]. This shows that such a solution is necessary and presents a quick way of spreading knowledge if designed well. The study also pointed out that like women, men are not a monolith, therefore creating an eHealth solution which would satisfy various types of people needs through tailoring and research [56]. A Canadian study also found that web-based content, which was easy to understand, free, had an enticing design, were factors that motivated men to use such sources, though added features such as games and forums to increase interactive options were not regarded as important [68].

A patient portal is a mode of communication between people and healthcare service providers with capabilities spanning from access to select health information to patient-specific educational materials, supporting informed decision-making, and patient management [8],[9]. The use of patient portals in healthcare provision has been going on for several years, but only recently have HCPs started to understand their potential in care optimization [71]. Their purpose in maternity care has been limited up until now. A study in Australia investigated the use of a patient portal in maternity care and women's opinions on it. Its results found patient portals to be an efficient way to deliver personal health related information, general educational materials and be a great reminder on next steps in women's care [72]. The use of patient portals could also be considered as a medium for better engaging men during the ante- and postnatal care process, provided that research was conducted on whether men would actually be interested in such a solution and what would be their vision of it.

3 Methodology

This part of the paper introduces the study methodology. A detailed overview is given on the design, sampling, study period, data collection and analysis as well as ethics considerations.

3.1 Study design

This study is qualitative research. A qualitative study allows to better understand people's personal experiences by giving access to their versatile stories and point of view [73]. This enables to achieve a thorough understanding of the sample group as the collection of data is more open. It is used in cases where little is known on the topic [74]. The goal is not to prove what is already known, but rather to discover new aspects through researching people's experiences [74]. By using semi-structured interviews as a method to gather data the researcher has an opportunity to collect more detailed answers [75]. When planning the interview, concrete themes are set which include general questions [74]. At the beginning, the interview follows the interview plan but as the discussion advances the interviewer has the freedom to set the sequence of the questions based on the situation at hand [74]. As the journey to fatherhood is individual and special in nature, using the qualitative research method allows for the most adequate way to understand individual experiences. The interviewer can be convinced that the participant has understood what is specifically being asked and can give explanations if necessary, as the number of questions is not limited, the interviewer has the opportunity to ask extra questions in order to expand on chosen topics [74]. To ensure the key components of a complete qualitative study the list of standards for reporting qualitative research was followed [76].

The participants for the semi-structured interviews were recruited by the author conducting the study. Study invitations (Appendix 1) were shared through the National Institute for Health Development Facebook page, in different pregnancy related Facebook groups and on the Facebook page of the student conducting the study. The invitation for

the study shared publicly included contact details of the student. After a potential participant showed interest in the study, an informed consent form was sent to them digitally pre-signed by the student in charge of the study. All communications with potential participants and participants of the study were conducted through the TalTech Office 365 e-mail platform. All potential participants were encouraged during the first email exchange to ask further questions about the study before they gave consent. By digitally signing and sending back the consent form (Appendix 2) before the interview, the participants agreed with the terms of the study. The consent forms, like all other data collected during the study, were to be preserved in the TalTech cloud server (Office 365) – an institutional server, which requires an internal account and personal password for access.

In all the materials concerning the study such as the study invitation, informed consent form and the interview the words ante- and postnatal were substituted with expressions before the birth of the child and after the birth of the child. This was to make sure that all participants would understand the aim and purpose of the study and not confuse themselves with the use of specific professional jargon.

3.2 Sampling

All together 13 participants met the inclusion criteria and were included in the study. The search for participants lasted from 21 December 2021 until 27 January 2022. The methods used for the selection of the participants were a combination of purposive sampling and convenience sampling. In purposive sampling the participants are chosen by the researcher based on their knowledge, experience and expertise concerning a certain group of interest, participants are included purposefully and based on certain criteria [74]. Convenience sampling includes persons who are easily reached by the researcher, as such persons of interest to the researcher who are available and willing to participate are used [74]. In this case representatives of the general population were included who met the set inclusion criteria, but the principle of easy access was applied as well. The study had a predetermined set of inclusion criteria (Table 1), but participants were included in the study based on the order of answering the study invitation. The inclusion criteria were chosen and created based on the topic of the study and relied upon previously conducted studies on similar topics. The exclusion criteria stemmed from the reasoning that

situations which deviate from the ordinary or are pathological in nature when it comes to maternity care bring with it a more specific need of information and counselling [27].

Table 1 Inclusion and exclusion criteria for the study

Inclusion criteria	**Exclusion criteria**
Man	Woman
At least 21 years of age	Under 21 years of age
Speaks Estonian	Does not speak Estonian
First-time father and/or already has children: - Partner is at least 28 weeks pregnant, and the pregnancy is without complications - The man has become a father within the last 5 years, the child was born after the 37. week of pregnancy vaginally, did not need additional medical attention after birth and is healthy.	First-time father and/or already has children: - Partner is less than 28 weeks pregnant and/or the pregnancy is high risk - The man has become a father more than 5 years ago, and/or the baby was born before 37. weeks of pregnancy and/or the birth process was pathological and/or needed medical attention after birth.

As the study focuses on men's experiences, only men were included in the sample. The set age restriction stemmed from previously published studies. Firstly, this allows for the comparison of the current study to previously published research [13],[27],[77]. Secondly, the present study does not touch upon risk groups such as adolescent fathers. Previous studies have considered the age of adolescent fathers to be different, but maximally up until 20 years of age (included) [78],[79],[80]. The inclusion criteria accommodates both men who are becoming a father for the first time or who already have children, as this allows to gather data on a wider range of experiences. Including men whose partner is at least 28 weeks pregnant allows for a more comprehensive overview of men's experiences. By that stage, the most important tests and ultrasounds have been performed, based on which it has been determined to the best of the maternity care professionals' abilities whether a pregnancy is running normally or whether the pregnancy carries any risks. The scope of topics on which the men may have searched

information on is wider. Including men whose partner is at an earlier stage of their pregnancy may hinder the potential to gain enough information during the interview.

The requirement that the pregnancy is running without complications (the tests and ultrasound results have not found any significant deviations from the normal which would require the woman to be monitored by the doctors) has been set, because this does not require specific counselling on very individual cases. The same reasoning can be given to the criteria that the child was born after the 37th week of pregnancy vaginally, is healthy [81] and did not need any additional medical assistance after birth as this allows to gain base information from men in a normal situation.

Lastly, if the man is already a father, the criterion for inclusion is that they became one during the last 5 years. Choosing this time range allows for the comparison of men and their experiences in a more thorough way as maternity care provision, delivery hospitals and application of person-centred care principles have changed comparing to the time 10 or more years ago. Also, it allows to better compare those who became fathers before the COVID-19 pandemic and who are becoming/have become fathers during the pandemic. Experiences of men who do not fit the time frame are still considered to be important but may significantly differ from the men who have become fathers in the recent years or are becoming fathers currently. That may complicate the opportunity to write a comprehensive analysis based on the interviews.

3.3 Data collection and analysis

Because of the ongoing COVID-19 pandemic the interviews were mainly performed via Microsoft Teams. The interviews were conducted between 10 January 2022 until 31 January 2022. Before any of the recording for the interviews started, the participants were reminded of the aim of the study, recording of the sound and video of the interview and how the collected data will be used in the study. Participants were also reminded about the voluntary participation in the study and their right to withdraw their consent at any time without an explanation. The interviews were recorded based on the given consent of the participants, the videos were recorded through Microsoft Teams and stored in the TalTech OneDrive cloud. During the interviews, participants were asked to have their camera turned on to create a more trusting atmosphere, when talking about their

personal experiences. This also allowed the interviewer to take note of the participants emotions. This was also the reason for recording both the audio and visuals of the interview through Microsoft Teams. Visuals were not recorded in a case a technical error occurred which did not allow for the use of the camera. In two cases instead of using Microsoft Teams the interview was conducted through a phone call based on the request of the participant. All the interviews lasted from 30 minutes to 1 hour and 20 minutes.

Data for the study was collected during the interviews (Appendix 3). The interviewees were first asked questions concerning background data such as their age, nationality, the county they reside in, whether their partner was pregnant or not and/or how many kids they already had as shown in Figure 3.

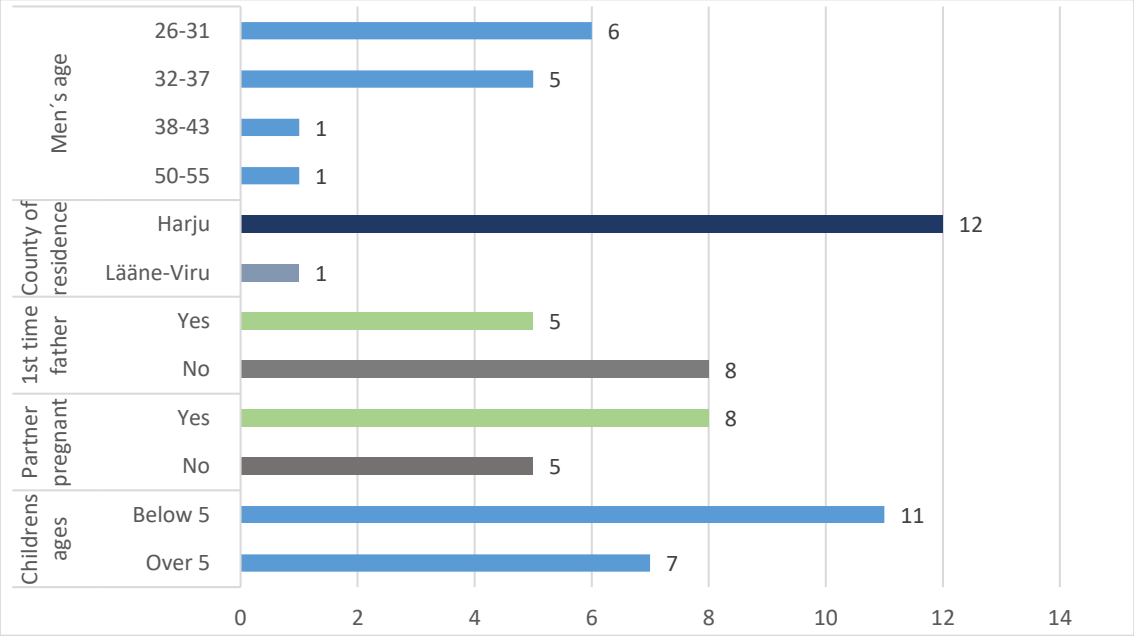

Figure 3 Participant´s background data

All other questions were separated into three categories and covered questions about topics such as men's information needs during the ante- and postnatal period, information availability and reliability, a digital information source for men. These categories were furthermore divided into questions such as what topics men consider important during the ante- and postnatal period, what type of information sources they have personally used/are using during the ante- and postnatal period, would they rather use digital information sources or any other information carriers. Moreover, how they rate information availability directed at men about the ante- and postnatal period, what kind of problems have they encountered when it comes to information availability and reliability, what in

their opinion is the most efficient way to share ante- and postnatal information with men and whether they see using a patient portal as a possible source for information if such an option existed. Participants were also asked about whether the COVID-19 pandemic had affected information access for them or hindered their engagement in the ante- or postnatal process, as it has brought changes to the way maternity care is offered.

Recorded video and audio files were transcribed verbatim using the web-based speech recognition programme [82]. After that the text files were perfected by re-listening the recording to fill in missing parts and add indications such as what intonation was used for the answers, if they were laughing and sighing and if they made audible pauses for thinking. Background data of the interview transcript included the date of interview, participants, what medium was used, how long the interview lasted. In all the transcriptions the interviewees names were replaced with the sequence number of the interview.

The NVivo programme was used to manage the coding of interview transcripts for this study based on themes shown in Figure 4.

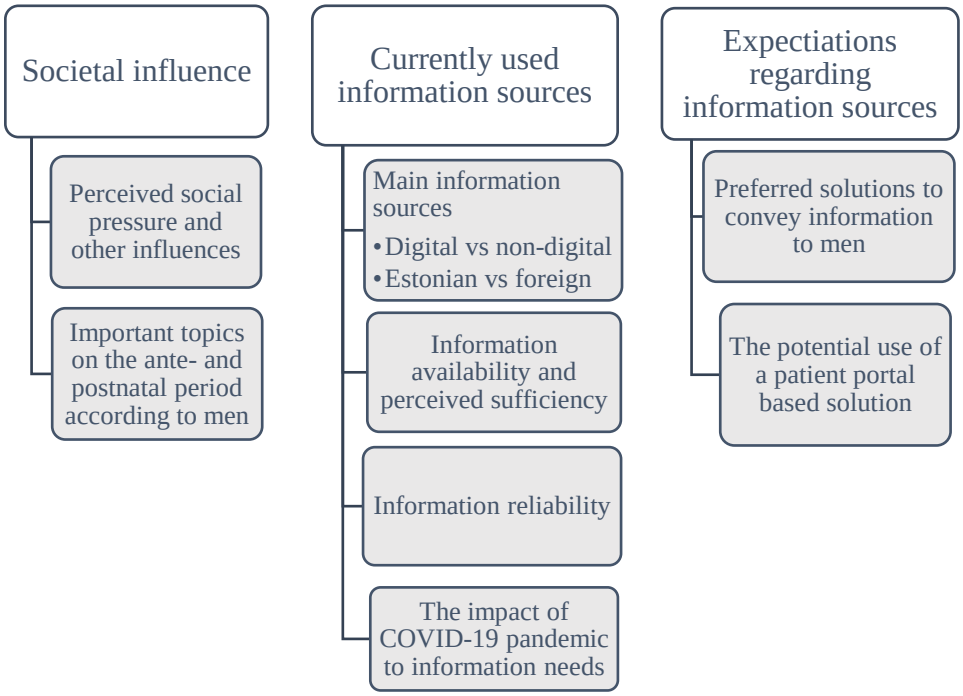

Figure 4 Data themes and coding

This study is based on a combination of deductive and inductive directed data analysis. Deductive analysis stems from previous theory or a literature review which is being used as a basis for research questions. Categories of analysis are created before the main body of the analysis is conducted. Inductive analysis being the opposite, as it evades previously set categories and the codes are derived from specific data. With directed content analysis there is an existing theory which one attempts to support or enhance with employing data gained from the study. [83]. Deductive coding was used with the predefined set of codes stemming from the main themes set in the interview plan. As data analysis was performed, it revealed new codes, which as a result were created inductively.

Even though a small sample size is common to qualitative research, the methods used for this study ensured data saturation. Data saturation being achieved when no additional data can be found or in a broader sense, when new data coming in brings no additional information to answer the research questions [84].

3.4 Ethical considerations and data protection

As this study touches upon people's personal experiences in connection with a medical setting, approval by an ethics committee was sought for. This study was given approval by the Research Ethics Committee of the National Institute for Health Development on December 2 (research no. 2316 decision no. 972).

Each participant was given an overview of the aim of the study before the interview began. Everyone who agreed to participate in the study and have the interview recorded gave consent by signing an informed consent form. The form was signed by both parties digitally. The participants were made aware that their inclusion in the study was voluntary and that their answers would not in any way affect the level of maternity care provision their partners received. Confidentiality of the participants was guaranteed so that all identifiable information was separated from the person and the answers they gave. Each participant was given a sequence number, which was used in interview transcripts and data analysis.

All data for the research was collected during the interviews. The collection of personalized data which included the name of the participant, email, age, nationality,

place of residence on a county level and information about how many weeks pregnant their partner is or how many children they have was necessary because that allowed to check whether the participant followed the needed inclusion criteria. The name and email of the participant were revealed during the correspondence about joining the study and sending the participants the necessary Microsoft Teams link for the interview. The full name of the participant was only shown on the informed consent form but were not used during data analysis or when presenting the results. In some cases, the participants used their partners or children's first names in the interview. That information was not used in any form when presenting the results.

All the participants personal data, with the recordings, were stored in the TalTech OneDrive cloud server, which is a password protected institutional server. All the data collected into the cloud server was accessible only to the student in charge of the study and to their supervisor. At the end of the data collection phase all the digitally signed consent forms were destroyed (deleted). The semi-structured interviews used to collect data were recorded only to allow for accurate data analysis to be performed based on the answers given by the participants of the study. The audio and visual recordings were deleted after transcribing was completed. The transcribed interview texts will not in any capacity be presented in full length in the study or on the Internet. During the data analysis phase only specific ideas or thoughts of the participants will be used to present the results but not full-length interview texts. In the master's thesis the men's thoughts and opinions will only be presented as quotes. The results will be presented in a generalized manner both in the master's thesis and in other publications. None of the collected data will be relayed to third parties or countries, also the data will not be uploaded to any databases. Data analysis files may be shared only in the case where a publication process requires it. In that case the data will be relayed in a password protected manner through the cloud server and only if an individual request for that data has been submitted. The transcribed texts will be preserved by the author in a password protected cloud server for up to 5 years, raw data analysis files for up to 10 years.

4 Results

This chapter presents results gained from the interviews. Analysis of the subjects discussed during the interviews outlined three main themes: societal influence, currently used information sources, and expectations regarding information sources. Each of the main categories consist of smaller sub-categories representing important topics concerning engaging men during the ante-and postnatal period and supporting their information needs.

4.1 Societal influence on men´s participation during the ante- and postnatal period

The topics covered under the given theme provide an overview of men´s perceived levels of social pressure and other influences sensed when it comes to engagement during the ante- and postnatal period. The theme also investigates what men consider to be important topics on the ante- and postnatal period based on their perceived roles.

4.1.1 Perceived social pressure and other influences experienced by men during the ante-and postnatal period

A part of the discussion during the interviews was questioning men about their perceived sense of pressure to be present during their partners ante- and postnatal period both from the society as well as their friends and family. Generally, men agreed that they did not feel any apparent pressure from the society.

> *"I think it* (sense of pressure by the society) *is very individual. I sense that… I could not say that the society is pressuring me. I am involved. /.../ Well, I want to be involved. /.../."* (7)

This answer shows that even though men do not sense pressure from the society, it has no separate effect on whether they wish to be involved in the ante-and postnatal period or not, because they want to be involved anyway. Yet there is the possibility of these

attitudes having formed subconsciously based on generally accepted social norms and peoples' own ideals.

> *"I don't know. In a way we are all affected by the society we live in. That dictates what the term "normal" means, right. /.../. I have no problems with it* (being there for the birth*) in the sense that I would only go because others have done so and that is normal. Rather you want to support your partner as much as you know and can. "* (3)

As the quote shows, the general surrounding social attitudes can affect men's participation to some extent dictating what they consider to be normal. However, as the participants outlined, perceived "normality" might influence individual actions as seen also in the next example.

> *"I can't see any type of pressuring, at least not in my case. And in my friends circle as well, I have not noticed that someone was totally against being included."* (2)

This quote demonstrates that if being involved felt natural to everyone, the wish to be a part of one's partners ante- and postnatal period was self-explanatory. Any kind of pressure felt was more to do with men putting pressure on themselves.

> *"/.../ Definitely I have felt the pressure, undoubtedly, /.../, I think that depends on the man a lot. Does he even want to understand in his head that he should be there to support his partner, help with things or is he stuck in the mind-set what once was."* (6)

As explained by the quote, men push themselves to be present as they feel like it is the right thing to do. Not being there for the partner is an outdated mind-set involving the notion that a woman had to deal with all the family-related aspects herself.

When discussing other influences that affect men's engagement in the ante-and postnatal period such as their sense of inclusion, participants found that to depend on the level of personal willingness.

> *"I would say absolutely it* (the support available to be included) *is enough and yeah there are things* (about supporting men) *that could be made better. /.../ but the direction is already right in my opinion. /.../ There have been more campaigns on the state level as well where they encourage men to take part more and more /.../"* (4)

Another of the interviewees also mentioned general mind-sets of people developing in the right direction when it came to engaging men during the ante- and postnatal period.

> *"2008,2009 /.../ you looked at like magazine covers, like what you see in Selver, all placed in a row. Everyone is giving birth, right. Well now Padar has been in the picture with his son a lot. But in those times if someone gave birth and there was a family picture, then you could only see the mother and child /.../ men you could not see anywhere. The man has to work, we won´t put him in, his hair is uncombed, he has not been to the hair salon, the shirt is wrinkled. You are not coming on the picture. We have a nice magazine here. That is how it has been." (9)*

The given quote demonstrates how the visual image of men's inclusion during the ante- and postnatal period has become more common, trying to engage them by making the men´s role during the ante- and postnatal period a more natural and a more visible occurrence. The excerpt also indicates the shift from previous norms, which saw men only as the breadwinner of the family to now being an expected source of support for their partners with childcare as well.

As explained by the three previously given quotes, mostly the grade to which a man is included during the ante-and postnatal period is up to them. There are no restrictions for men to take part, but there should be more focus aimed at including or supporting men, even though strides are being made compared to a period of 13 – 14 years ago. The idea of offering more support goes for both men who experience going through a normal ante- and postnatal period, referring to the mother and child being healthy on all accounts, as well as men who happen to experience the ante- and postnatal period riddled with more complex issues. This is because even on just the general journey of becoming a father men describe a need for support.

> *"/.../ Just some group /.../ where men could discuss their worries, just general things, their relationship, family. /.../ You can just get everything off your chest and move on with your life, you don´t need to get any feedback. /.../ It just lets you know that your life might not be that hard compared to someone else. You may be in a phase, but it will pass and not remain with you for years to come."* (10)

As seen from the quote that even in cases where nothing is particularly wrong, as men put pressure on themselves, a need arises to discuss their thoughts and ideas with others who have shared the same experiences. But "*maybe if there would have been some problems on the road, then it* (the situation) *would have changed it* (my opinion on needing more specific support)*."* (7)

The quote illustrates that in more complicated situations men would not be as sure about being able to manage on their own with the support available to them at current times.

In conclusion, men think that their wish to be present comes from their subconscious mind, which has been affected by the current general social norms and by the people who surround them. Men deny a pressure from the society, mostly describing a weight they put on themselves, sensing that they have the means available to be included, if that was their wish, but only in normal situations where everything was fine with the mother and baby. The participants mentioned that it was generally up to them to include themselves as there were no systems in place to engage them separately. They could feel out of their depth if the ante- ante and postnatal period did not go normally, because a necessity of support for men was already described for topics of a more general nature.

4.1.2 Topics men consider important in the ante- and postnatal period

As men are mostly left to their own devices to be involved in the ante- and postnatal period, an array of topics was considered significant by the participants in order to be well-informed during the antenatal period saying it was important to know *"/.../ how I can help my partner the most during the pregnancy and offer support. What are the so-called possible things that a man could help make easier, be useful with or well, just solve. /.../"* (4). For others *"/.../ the main topics and questions are kind of organisational. When do you have to go where, what to take with you. /.../"* (3) so to make sure *"that some very important things would not be left on the last minute."* (4)

These quotes illustrate the range of topics men think about as they prepare to welcome their child into the world. The topics ranging from foetal development to preparations for when the child comes home, showing that men wish to educate themselves on the antenatal period as well, not only how to support their partner at the birth.

> *"/.../ the further the pregnancy went, the more there were topics concerning the delivery. /.../"* (4)

This quote shows how the topics were constantly replaced with new ones depending on how far along the pregnancy had developed. After the birth of the baby the themes moved on to childcare like the *"/.../ child's different development stages and the small nuances of raising children /.../"* (7) as *"/.../ you are scared to hold them /.../ scared that something will brake /.../ when the child sleeps, then you go and check if the baby is still breathing*

if they happen to sleep for too long. You have those small fears. The baby is not eating, you are scared of everything. why isn't the baby eating?" (12)

These answers by the participants demonstrate that men also prepare for the postnatal period in order to know how to care for the child and understand when to worry or not. Indicating that men's information needs extend on to the postnatal period and also cover an extensive range of topics just like during the antenatal period.

When talking about why the previously discussed topics were important to men, participants mentioned looking for information to calm themselves as information gave them *"/.../ more confidence and inner peace with the idea that, /.../ I can manage certain things."* (4). Also, to be a better support to their partner. As one participant commented *"/.../ the easy answer is – happy wife happy life. The easier it is for my partner, the less do any so-called worries and problems carry on to me."* (1). For some it was a question of being prepared.

> *"/.../ I know how to prepare for some things. For example, when the delivery process starts /.../. So that I would not stress myself out. Because for me before I went to this /.../ course, then I thought that when the waters go, then I have to pack myself and my wife in the car, with all the stuff and basically speed away with the car. The reality is actually, that it takes time, 2-3 hours before things get significantly more intense. /.../ But I was already thinking of everything like, how do I have to park my car in the parking lot to drive away fast enough, when the time comes"* (10)

Knowing how the process will look like in real life helped the first-time fathers to overcome the stress connected to being ready for the birth of their child. This indicates how necessary it is for men to be able to find places where they gain information as well. As the woman prepares herself for the start of the birth, so does the man, but for them the topics are of a different nature, as they are mostly concerned with how to support their partner, when is the right moment to leave for the hospital and, what are the right items to bring. In short these are aspects, which the women depend on their partner to take care of as their focus shifts to fully concentrate on giving birth.

Men who were becoming fathers for the first time said that they considered almost all the information they got on the ante- and postnatal period to be important.

> *"At the beginning everything is new, and exciting /.../ at that moment it was not so that one thing seemed more important than the other /.../."* (7)

The participants agreed that with the first child the amount of information one looked for was larger but stated that the amount narrowed down from the second child onwards.

> *"They* (the topics) *are important for the reason that well it's our first child. With the second one, things will definitely be different because you kind of know the rules by then. /.../"* (4)

This quote indicates that by the second time the amount of information needed gets narrower because men know the basics but the need does not disappear entirely.

> *"/.../ years ago, I imagined that I know everything about kids, breastfeeding. But now being in the situation again /.../ I read through all the manuals again. The road map. Like you have been to Tartu Marathon before 12 times /.../ but if you go this year, your read it again. Because things change, you can never say that I already know this, I have done it once before."* (9)

This shows that even though due to previous experience the man is better prepared, topics concerning both the ante- and postnatal period are constantly evolving, and men continue to seek information.

When men were asked to describe what usually led them to search for certain information, references were made to personal preference when managing their information needs. For some it was not necessary to prepare themselves with all the possible scenarios beforehand.

> *"/.../ I think that I am not a type of person who would try to think through the world's worst scenarios beforehand and then try to solve them just in case /.../"* (3)

As the given quote illustrates, in these cases men look for information situationally. For them knowing everything felt more like preparing for situations that that will not happen, therefore learning about them would add more stress than comfort.

For other interviewees the incentive to look for information was being prepared.

> *"/.../ choosing a baby carriage was worse than choosing a car. /.../ you did a lot more of test drives and other x-things. Looked where it would fit, how it would fit."* (4)

This quote shows that gaining information beforehand allowed the man time to contemplate beforehand and not end up with bigger discoveries at the end which in their opinion saved time and energy in the long run. Several participants mentioned the absence of a strong incentive to look for information.

"/.../ thankfully everything has always gone well (with the children). *So, in that sense there haven´t been any issues that would force me to worry or search for more information."* (3)

As the given quote highlights, for men having the fortune of their partner´s pregnancy develop without any complication and the child being born healthy were the reasons for which they had not required to make many information searches. Indicating that if something were wrong, the need for information and the range of topics would be bigger.

All in all, the topics men consider important during the ante- and postnatal period range from the early foetal development in the womb to the delivery and up to tips on raising the child. The reasons why men considered these topics important were varied as well, but generally covered the themes of gaining confidence, being able to support their partner and being prepared for what is to come. The incentive to look for information usually stemming from wishing to be prepared or needing to find information about ongoing situations.

4.2 Men´s current use of information sources during the ante- and postnatal period

This theme covers the following codes: main information sources, digital vs non-digital, Estonian vs foreign; information availability and perceived sufficiency; information reliability; the impact of the COVID-19 pandemic to men´s information needs.

4.2.1 Main information sources

Several examples were given when asking the question about main information sources used during the ante- and postnatal period by men. Those examples included hospital websites, blogs, forums (specifically the forum Perekool), articles, social media groups, applications, shows, videos, films, podcasts, books and, courses offered by family schools. The participants described turning to Google the most to search for information about the ante- and postnatal period.

"/.../ if you type something into Google, then yes, the first thing is the Perekool forum. Well, but you don't remember all of it, there have been some hospital

webpages or, or, or some other sources. But to name a certain place to where I looked – there was none." (2)

This quote demonstrates that when it came to looking up information on one's own, it was the easiest for the men to turn to Google. They described noticing different sources available on the Internet such as hospital homepages but referred mostly to forums. As illustrated by the quote, men specifically name the example of Perekool.ee. That may be because the website has for a time now been the main source created in the Estonian language. It includes articles by specialists, experiences shared by families about parenthood and forums to post questions. The website is mostly known for its forums. The number of participants referring to search results which include forums indicate an abundance of such sources and their high position in the search results.

Another way of gaining information was taking part in the family school or other courses related to the ante- and postnatal period.

"/.../ The family school courses /.../. Those were good /.../ some we visited together with the partner; some were only the ones where the woman should take part. I just listened in as well with those, because /.../ let´s say two pairs of ears are better than one." (4)

The participant mentioned taking part in courses that were in his opinion only directed at women giving the impression that men might not feel welcome to take part in some of the offered courses.

Next to the previously mentioned web-based sources and family school lessons some men preferred to turn to paperback materials such as books and pamphlets.

"Well, I read books myself and rather on paperback, so I would prefer something on paper." (7)

This quote indicates that for some it is just a question of personal preference to read a book rather than visit a webpage, which is to show that getting people to consume information has to come in various forms. Specialists were also mentioned as some participants preferred asking the doctors and midwives directly.

"Definitely the assistance that we got from the staff at the hospital as well, who gave advice and answered our questions and so forth. /.../, I am the type of person who likes it really much if the information I get is immediate. (4)

The excerpt showing that going to a professional was preferred due to its direct nature. For some turning to a specialist was something to do after *"well, if I do not find anything* (on Google), *then I have not yet called but there would always be the possibility to, I don´t*

know, call the general practitioner (GP) or a midwife to get those answers." (2). Participants were also questioned about their knowledge and usage of the midwifery counselling phoneline saying *"yes, I have told my partner as well that if shit happens, she should call there* (midwifery counselling phoneline) */.../ but thankfully things have not gone that far."* (10). The previous quotes about turning to specialist demonstrate that men tend to use them as a last resort rather than a first point of access to gain information. The explanation seemingly being that circumstances have not gotten so bad as to directly contact a specialist.

In short, the main information source men turn to is Google through which they gain access to an array of sources such as forums, hospital websites, blogs and much more. Family school courses were considered as a good source to gain direct information from the specialist in comparison to calling the specialists, which was considered more as a last resort. Books and other paperback materials were mentioned as well but remained as the choice of the minority.

4.2.1.1 Preferred use of digital versus non-digital sources

The majority of the men interviewed preferred digital sources to non-digital sources as they found them to be the fastest way to gain information, it being easier to handle and having the knowledge travel with the person anywhere they go.

> *"Rather the digital, because it is ehm easier to handle. I can take it* (the information source*) everywhere I go, and I can use it any free moment I need, like ee walking around with a stack of books is not healthy."* (5)

Another participant also mentioned preferring a digitally available source but did highlight an issue that has to be kept in mind.

> *"It* (a digital source) *is just easier and faster for you and the other option is the computer. Like on paper, I don´t know, things get out-dated much faster. But well, it depends also. On the Internet info always changes /.../ then you end up being confused. /.../. (10)*

This quote shows that even though a digitally available source is the preferred one and paperback version get out-dated quickly, there might be an opposite effect with digital sources. With the constant flow of new knowledge fed to people through digital means it is hard to figure out how much of that info is true. As a result, the users have to be more

versed in digital competency, health literacy and source criticality when it comes to filtering through the information they come up with.

When men were asked to choose whether they would use a website or an application, most of them chose a website. Pros for the website were better management of info, the knowledge there being more current and having less steps to reach the information.

> *"Definitely websites /.../the easier, the better. If there are three, four extra steps, then I start losing interest and I already feel stressed...stress runs higher and so if there is a link where you can get things* (information)*, then I would be a big admirer of that link."* (6)

The main element that illustrated choosing a website was that there was no need to separately download something on the phone. The ones who preferred an application described a smoother user experience.

> *"To be honest, if it was a decent application, then it sounds more interesting, but webpages usually are fine as well. But if to prefer something, then an application because usually with those developers go more in-depth. It is made more interesting and interactive."* (8)

The reason for both options were the same as some said that the user experience would be better on a website while other gave that credit to the applications. Either way a digital solution was seen as a preferred one not only because of being easily accessible digitally, but also offering more content wise.

Separately family school e-courses were mentioned as a preferred digital source, offering a more flexible way for families to take part. E-courses were considered as a good option as one participant pointed out:

> *"But these e-courses, I get the same amount of info from them, maybe it is that you don´t need to put a sophisticated jumper on and go to a hospital, but you can stay at home, in your comfortable clothes. That may be even better like that"* (6)

This shows that the ease of access and comfortable manner of joining family school e-courses is an important factor in getting men to join the courses. Maybe this also allows them to feel more comfortable to listen to courses which they would otherwise skip, thinking it was only for the women.

The participants of the study were made aware during the interview that Estonia in fact has an application for pregnancy related information created by one of the hospitals as well. When questioned on whether the men knew of its existence, half of the participants said they *"have not heard anything about it"* (2) and the other half *"/.../ have heard of it,*

/.../ but I have not used it /.../." (5). Only a few had tried using it but quit, with one saying that they have used it multiple times. These quotes indicate that even though an attempt has been made to create a digital source in Estonian containing reliable information, alone the creation of something does not suffice. The created solution also has to be worked on constantly to ensure person-centredness when it comes to the user's information needs and usage of the source. Person-centredness necessitates HCPs being able to follow trends, educate themselves and develop support methods based on gaining constant feedback.

In conclusion, men preferred a digital information source to a non-digital one due to ease of access. Next to digital materials paperback ones were considered to get out-dated much quicker than digital sources. The opposite being a possibility with digital materials where people get confused by the shear amount of new information. The main takeaway being that people need to be smart consumers of digitals sources to discern the truth from everything else.

4.2.1.2 Preferred use of Estonian versus non-Estonian sources

As this study is to understand the views of men in Estonia about the information available to them during the ante- and postnatal period, a question was also asked about how many of the sources used were foreign. A little under half of the participants had only used sources published in Estonian. The most frequently named sources being *""A Guide to Childbirth" by Ina May Gaskin was recommended by an Estonian midwife /.../"* and *"Right! "Father and baby" exactly. That was fun, okay there were no instructions on how to change a diaper /.../ but it was written in a simple and realistic way." (4).* Also as seen in section 4.2.1, the Estonian webpage Perekool.ee and local hospitals webpages were used.

The foreign sources mainly included webpages, applications, and books, which were mostly written in English.

> *"/.../. The market is a bit bigger for an English application than for an Estonian one. The Estonian one has maybe 9000 people if not less /.../ if it is in English, then there are like one, two, three hundred million people who can use the same app, there you have better information exchange as well, there is like more of it." (10)*

This quote illustrates that foreign sources are used as they are widely available, and the information exchange is better because of the number of annual users compared to any

sources available in Estonian. What this excerpt also shows is how information availability is currently connected to language skills. Men who are less skilled in foreign languages may find themselves less equipped to gain information they are looking for. This requires an improvement of materials created in Estonian to ensure that men who are already at a disadvantage, would not find themselves at an even bigger disadvantage information quality wise.

The same participant also mentioned looking into Facebook groups directed at men and mostly finding only a few created by Americans in the context of the United States.

> *"/.../ but that was through the United States point of view. Because we have a different culture here. So, this information pushes your whole world view out of focus, because like, because what is happening to them cannot be brought into the Estonian context. Or it is really hard." (10)*

This quote demonstrates that men do find sources in other languages that they would be interested in but as that information is based on other countries rules and systems, it is hard to gain any use from the described experiences. This indicates the need to provide context-specific information to men as both cultural and healthcare systems-based differences in each country affect the nature of the content. The same was said about foreign materials being translated into Estonian.

> *"Yes, definitely* (looked up) *some things* (using foreign sources)*. /.../ In Estonian there are so many translated materials and well some of them are well. It can be considered a waste of time and energy that the material has even been translated in the first place. It seems like some of it has already originally been of questionable nature, not wrong /.../. They include the American healthcare system. That is well totally nonapplicable for us." (1)*

When asked about how many languages the men feel comfortable to search information in, the median answer was 2 languages – Estonian and English. This demonstrates that men´s access to information is not restricted because of language skills, rather it is a question of how much of the foreign info is useful to men here in Estonia. Purely translating the materials to boost the amount of information sources is not considered as the key to accessing knowledge as it may end up creating more confusion. It is worth stressing though, that participants of the interviews were mostly with a higher level of education, so the result cannot be equated to the general public. Although questions about the participants background data did not include education, references to the participants

profession and educational background were made during the course of the interviews by the men themselves.

To sum up, the men in Estonia use both local and foreign sources during the ante- and postnatal period to gain information. A few described only using Estonian sources while others turned to foreign webpages, applications and books referring to a wider range of information being available. The downside to using foreign sources being that one could read foreign experiences and general information but find it hard to place that information into the Estonian context.

4.2.2 Information availability and perceived sufficiency

Each of the participants was asked during the interviews what they thought about the amount of information that is directed towards men on the topics of the ante- and postnatal period. To begin the analysis into information availability, a distinction needs to be made between general information availability (the type mostly focusing on women) and information made available with a specific focus on men´s information needs and engagement during the ante- and postnatal period.

> *"Well, the amount available to men is likely the same /.../. Availability wise it is the same that it is to women. But the amount that is focused on men. I think that I cannot currently say that there would be a lot of it./.../. Maybe some family school course contributes to it* (representing a source of information aimed specifically at men). *How a partner can support their pregnant woman. /.../ it looks like that it is just about directed at men but nowadays the partners may not be men, who take part. Generally, I think that or I rather don´t know that there would be a lot of information made easily available to men, at least I am not aware of it."* (7)

This quote demonstrates and sets the tone for further analysis in the sense that even though men have the same access to information currently available to the women, information aimed at informing and engaging the men remains low. As another participant put it *"let's be honest, you always read those things* (materials) *and it is not from the men's view, it is always from the women's view. /.../ Maybe that is why men are like ...or are not like interested very much in reading these things* (information currently available) *in the end, because well it won´t be the man doing the pushing in the end."* (8). The quote indicates to the possibility of more men finding the necessity to educate themselves on the ante- and postnatal period if the information sources catered to their needs. However, it must

be kept in mind, that this behaviour is representative of the interviewees. Looking at a more general picture, where motivation for self-education may not be as high, but expectations for men´s engagement remain, systemic work with information availability and clarity is required.

At the same time several of the interviewees mentioned that even though information is not aimed at them, they manage to get by with the parts that are more general in nature, and they would not call the lack of info aimed at men a problem.

> *"I don´t know whether it is exactly aimed at men, but to understand your partner and child, you find the information necessary for that." (7)*

As the excerpt illustrates, a portion of necessary information about the ante- and postnatal period can also be gained from general sources.

A few of the participants named hypnobirthing courses as a source of information where they felt like they were expected to take part and felt encouraged in their role as a partner and soon-to-be father.

> *"There* (hypnobirthing course) *they honestly encourage you to go with your partner, or it is expected that the partner will also join. In my mind it is very important, because the partner has to be there or whoever to offer support. It gave a lot of information honestly."* (8)

The given answer demonstrates the effect, which a different approach can have on men. One is looking up information on the ante- and postnatal period on one's own initiative but it is another feeling to be specifically encouraged, so the man would feel included. As hypnobirthing courses do not fall under mainstream services provided during maternity care and are only used by a select group of people, the task falls on mainstream sources to present men with targeted information as well, which is usually not an option.

As the participants were asked about their own opinions on information availability, they were also invited to think about the opinions of their friends and other men generally – would their thoughts on information availability match. The answers generally being that their friends *"/.../ had the same thoughts, worries, questions that we had /.../ "* (13). One man with a medical background felt that his professional training separated him from his friends.

> *"Like when I think about friends then in a way definitely different* (their opinion on information availability) *because our professional background and training are different. As I work in medicine, then there are matters thanks to it that I have*

learned in advance, so I don´t have to search for it now, for example first aid /.../. (4)

This quote demonstrates that men with specific training feel more secure but think that their friends would have a harder time finding the necessary information they were looking for on specific topics. In this case newborn first aid was given as an example.

When talking about what other men in general would think about information availability and sufficiency, the general thoughts depended on how widely the interviewed men thought about the question.

> *"Well let´s say it depends on how far out of my shoes I step, right. /.../ when I think about a group of people, who do not use computers daily, then probably they can run into problems with both searching for the information, filtering through it and being critical of the sources. That is a possibility. As we can see in our society in current times, right. "* (3)

Based on the given quote it could be said that a lot depends on the person the question is asked from, their background and their skills in consuming the information available to them.

To summarize, the participants felt like they can get access to information on the ante- and postnatal period but they do not have access to information that was created with their experience and engagement as the focal point. The men did not consider the lack of focused information as a separate problem. They described being able to get by with the current information made available mainly through the women's point of view but did mention feeling better informed and engaged when they were met with information focusing on them. As demonstrated by the antenatal preparation course that expected and encouraged men to take part in it.

4.2.3 Information reliability

Even though the participants named an array of information sources which they could access, focus was also drawn upon the reliability of the information made available since the participants cited Google searches as one of the main sources of where they gain information. All the participants concur that even though they use sources which are made available through Google, they remain critical of mostly all they read on there.

"Well, that is, I would like to say, elementary. /…/ with other things in life as well one needs to maintain a certain scepticism about sources used. One should not trust everything what has been written." (1)

This quote demonstrates that people must be critical of the sources they use and filter through what they read. Again, if someone happens to be less skilled in recognizing reliable sources, that might place them at a disadvantage compared to others, who are more versed in recognising questionable information.

Sources that are deemed reliable without a doubt are hospital pages, information given out by recognized organizations or specialists.

*"Definitely the type of info...information source concerning Estonia are central hospitals or regional hospitals like PERH (*North Estonian Medical Center*) or, or Tartu." (6)*

As one participant pointed out in section 4.2.1, the reason for turning directly to specialists when they were in need of information was that turning to specialists is *"/.../ not like you read something on the Internet somewhere, from someone who says that they are a doctor, but end up being a truck driver called Vassili /.../."* (4)

This indicates that with certain sources comes the knowledge that they are reliable as well.

At the same time one of the participants added that even though hospitals are a reliable source of information, vigilance should be held with official looking sources as well.

*"Well generally to some extent it (*reliability*) is guaranteed for sure, if it has to do with an official organisation for example ITK (*East-Tallinn Central Hospital*) the women's clinic, delivery hospital or all that. The same with Pelgulinna (*West-Tallinn Central Hospital*) and all others. Ee and there is no difference even when it is like a private practice such as Confido* (private clinic) *or who-ever /.../. But at the same time, like in many other fields, have specialists who are registered but whose information you in no way can take seriously, because sadly it is wrong or out-dated or or the full opposite has been proven to be right." (4)*

The quote indicates that even though there are reliable sources where people do not have to question the validity of the knowledge shared, the web might also present information shared by practicing specialist whose methods stand separate from universally acknowledged facts. In such case the information could be presented as a professional opinion when in reality it is not.

Other sources, for example forums and blogs, are not deemed fully trustworthy. They do not deem that information to be wrong as such but say that the amount of different and contradictory information is huge.

> *"I think it is reliable* (the information he has found up until now), *but you still have to think along. You cannot just...because in those forums people as we know write all kinds of things, be it even using MMS* (Miracle Mineral Solution). *Those medications you know. /.../. Those I obviously do not support."* (13)

As the excerpt shows, any type of information gained from sources other than the ones deemed undeniably reliable are met with a level of scepticism.

So, to sum up, the participants demonstrated an ability to be aware of the reliability of the sources they used and thought it to be an elementary skill to questions information found on Google.

4.2.4 The impact of the COVID-19 pandemic to men´s information needs

As the study was conducted during the ongoing COVID-19 pandemic, participants were asked about their experiences of the pandemic influencing their information needs during the ante- and postnatal period. The answers men gave were influenced by whether they were first-time parents or not and whether they had had a childbirth experience before the COVID-19 pandemic began. Both positive and negative elements were mentioned. On the positive side, information became more available through digital sources, such as family school e-courses.

> *"Definitely better in the sense that, that there you have an opportunity to get it* (information) *sitting at home, all those family school e-courses and those. "*(6)

For some, the e-courses were not the positive but rather the negative when it came to the impact that COVID-19 has had.

> *"/.../ it reminds me a little of /.../ university lectures when COVID-19 came. It´s the same. You sit behind a computer but really, you are not really listening. You listen, but you don´t and you like kind of get info and learn but then you don´t. It is kind of a so-so situation."* (10)

This quote indicates that even though for some the new way of offering family school courses during the COVID-19 pandemic was welcomed, others did not consider it as a method that improved information availability, in a time where restrictions were placed on on-spot events. The given result highlights how in changed circumstances it cannot be

expected of specialist and other healthcare workers to immediately adjust and work differently. Simply making usually non-digital information sources digital is also not equivalent to digitalisation in healthcare or innovation itself, it is only a means to an end in an unexpected situation.

Some men felt neutral about the impact of COVID-19 to their experience, saying that it did not change much or anything drastically.

> *"/.../ I would not say that much has changed because of COVID-19, rather it just seems like people need to be more informed on what to expect when they go to the hospital or when you need to go to the hospital to do a monthly check-up or whatever. It rather seems like the people don´t care or they don´t find the information".*(5)

Those were mostly men who had had children before and said that their previous experience helped them cope better during COVID-19, already knowing the basics from their last experience and not sensing the need to work through as much information as first-time parents would.

> *" Definitely, in that sense I feel more confident, because then the world was normal."* (11)

The quote demonstrates how with COVID-19 the perceived sense of normality has disappeared, in which case previous experience has been a source of confidence. As first-time fathers lacked the confidence that came from previous experience, for them the pandemic had a negative effect on information availability and engagement. They were not able to join their partners in hospitals visits so they felt restricted from a place which they would otherwise consider to be an important source of information.

> *"I think that it* (COVID-19) *has* (affected information availability and engagement for men)*, and I think that it has a lot because, well, I am a type of person, like I mentioned before, who wishes to have face-to-face contact. I would have liked to go to the doctor's visitation, because well, I was able to go only one time, to the 20-week ultrasound. It was the only one. /.../ I would have liked to get information and asked them things. It is a personal preference, but well, then I would have gotten more answers Especially for first time parents, they need it a lot."."* (13)

This quote shows that for men becoming fathers for the first time the ability to meet up with a specialist and ask them questions is really important, which due to the pandemic was not an option.

On a more general note, which was non dependant on how much previous experience any of the men had, was the worry of not being able to join the birth of the baby. As one of the participants who works in the medical profession himself said:

> *"/.../ well maybe the biggest source of worry during the whole antenatal period was that if it now so happens that for some x-reason I for example get COVID from work or somewhere else right before the baby is born then the situation would be bad /.../ to some extent I sensed a lack of information from official sources. When I asked people who I knew who worked in the institution or something then I got info which was easily understandable /.../."* (4)

This quote indicates three aspects. Firstly that nationwide restrictions on the access of healthcare services created concerns about the restrictions influence on the men´s experience. Secondly, the lack of information sensed by a medical professional himself, who was only able to get adequate information due to his connections in the hospital itself. As such for people with no connections to a medical professional the sensed lack of information could have been significantly more dire. Thirdly, the responsibility does not only lie with the men who look for information, but also with the system which provides the information. Information exchange in crisis situations, because when it came to the general topic of information availability impacted by COVID-19, several participants said that compared to the times before COVID-19 became relevant, there is much more confusion now.

> *"There is more chaos maybe* (concerning the reliability of information shared anywhere). *There were so many opinionated people who appeared out of nowhere, there is a wedge between different thoughts of school and then you have to kind of know the truth by yourself, even when medical staff is already thinking differently and from there come all the other guys as well. Like, maybe yes, you have to be more able to analyse what you read or hear from somewhere."* (11)

The excerpt demonstrates the elements which made men feel like there was more chaos around as for them it felt like even the professional were at the cross-roads with the information they shared. As a result, *"/.../ information having to do with giving birth as well, like you cannot lie with this stuff to people, there is no use in doing that. But still people start to question that information* (relating to ante- and postnatal care) *as well. The information that is actually honest and useful, but they turn away from that also. Just by believing that now everyone must be lying to them. /.../ Just because of the current situation." (6)*

This excerpt illustrates how the COVID-19 pandemic has had an effect on information reliability, turning previously known facts into a set of opinions from which people choose the parts they wish to believe in.

To conclude, the COVID-19 pandemic has had an impact on men´s information needs because it has had an impact on information availability, reliability and access to services and with very few of those impacts being positive and a majority being negative. The extent of which is a personal matter to each and every individual with influencing factors such as previous experience or a person's professional training.

4.3 Men´s expectations regarding information sources

This sub-chapter focuses on preferred solutions to convey information to men and the potential use of a patient portal based solution. A patient portal being a possibility to better support and engage men during the ante- and postnatal period through catering to their information needs.

4.3.1 Preferred solutions to convey information to men

The interviewees considered the web to be the best channel to convey information.

> *"/.../I think that the Internet is the most efficient in my view. There you can find information easily. /.../"* (7)

The quote demonstrates the web being preferred due do ease of access, but at the same time does not suggest that everything put on the web would suffice. Participants suggested that there should be more efficient ways to convey information to men or gave suggestions on what could be the solutions to incite men to want to be more involved in the ante- and postnatal process.

> *"/.../ Little, very little* (conveys information specifically to men). *If I want something specific, then it is still described through the women's point of view, not directed at men. It is so that those who have been pregnant, those have said or written what should be. Literature or information that is directed at men so to say is hard to come by, especially in Estonian. At the beginning of the pregnancy, I tried to join some groups. There were literally only a few Estonian Facebook groups. There the information was out-dated, about three, four, five months old. /.../ "* (10)

The excerpt and previous results demonstrate that even though there is a selection of sources available be it digital or not, Estonian or foreign, very few of them are created with the goal of conveying information to men. As such, a multifaceted approach was mentioned by several interviewees.

> *"I think this needs to be looked at from different angles, you can´t do it one sided. Maybe one thing suits me but others don´t like what I do /.../."* (10)

As this quote shows, a one-size-fits-all solution is not the right way to go about trying to support men´s information needs during the ante- and postnatal period. One would need different types of sources and information, presented by different stakeholders to put together the large picture. Men referred that on the web the preferred way to convey information would be a separate webpage.

> *"A very specific homepage, I think. Where it would in a sense be an information source where you have sub-categories like 1-3 months, 4-6 months, 7-9 months, right, what to expect, what to do /.../"* (5)

This quote indicates that men wish to have a source dedicated to them, not specifying many details about by who and how it should be presented. Another possible solution that most participants mentioned was the necessity of walkthrough guides on what goes on in the hospital.

> *"/.../ People might not always come up with things, they may come in thinking a whole other thing and for you it seems logical* (the specialists). *Yes, you go there, and you do that, you can decide that there, and then you get that paper from there or or do that. That should be explained to people in a so-called step-by-step manner, what is the line-up of things you have to do.* (8)

This excerpt demonstrates that the current state of information exchange would require knowing a specialist to make sense of even the basic processes that go on in the hospital, leaving an average person without adequate information. Generally, the use of hospital homepages to convey information to men was seen as an acceptable solution.

> *"The info should be on the hospital homepages. Yeah, men go straight to those honestly if they want to find something. /.../.* (The homepage should be done) *so that men would not get lost in the mass of information."* (8)

The given quote indicates the potential that existing sources have if the information conveyed on hospital webpages would be logically sectioned, presented and directed to a specific audience.

Family school courses designed with men in mind were also mentioned as a direct and uncensored way to gain information.

> *"Yes, definitely, if they were at least like an hour, two-hour long lectures on men´s experiences. /.../ It would benefit the partner as well, if they can see the men´s point of view or situation like that. At home I do not know how to explain, right, what my version really is. /.../ You feel helpless, you can´t do anything. /.../ "*(1)

As the quote indicates, the course would be of help to men themselves but also help them explain their perspective to their partners. The main hurdle for the success of family school courses aimed at men was the thought of how to market them.

> *"/.../To open up family school lessons in delivery houses. How to reach those people...I´d call Tanel* (Padar), *let him speak about his experience, I talk about my experience, 50 men in the room and we talk honestly, through dark humour, through jokes. To let them know how matters really are and we would tell them that sometimes you feel like a sheep, and everything does not have a solution, but I think that approach would work /.../."* (9)

This excerpt shows that men wish to gain honest, real-life advice not the watered-down version of how events are during the ante- and postnatal period. Sharing important information through humour helps to keep people's attention. As it is important that the course *"/.../ can´t be boring /.../."* (12)

The ones who did not have any fundamental changes in mind suggested currently available sources of information be marketed more towards men and include more information aimed at them.

> *"I think the more there is material which well not in the title but in its content or title page, picture or wherever would almost scream - hey, you there, father, listen up as well. Maybe there should be more things* (campaigns) *like that /.../"* (4)

This quote demonstrates the importance of the content created about the ante- and postnatal period, how it should be inclusive of the men´s role as well. Indicating that currently there is a lack of materials which are inclusive of men being an important part of their partners ante- and postnatal journey.

All in all, men do consider it to be important for information to be conveyed to them from their point of view. They would be interested in a range of ways to gain information which was directed at them about the ante- and postnatal period indicating to the necessity of a multifaceted approach including general use of webpages, optimizing the use of hospital

homepages, family school courses and an increase in unspecified types of materials being marketed to the men.

4.3.2 The potential use of a patient portal based solution

As one part of the interview the men were asked that if a patient portal-based solution were to be made available would they see themselves and other men using it. All but one of the participants said that they would see people turn to a patient portal based solution for guidance. Those claims were backed up by certain elements men would like to see in order for them to accept it. Most of the participants mentioning user friendliness and ease of access as important characteristics for a specific source aimed at men.

> *"If it were easily /.../ and simply available, then I believe it would be a great help. /…/ It should be made user-friendly and marketed so that men would know of its existence, and it should include all the information available. So, you would not have to search too much, that it would be included in that particular system, so you would not have to click between different links to finally arrive at the information you need /.../."(7)*

This quote demonstrates the importance of the proposed patient portal based source to be well built as that is the key to men actually considering using it.

> *"/…/ it will greatly depend on how, how well this portal would be presented in the search engine search results. /.../ If it were to be on the fourth page then I would probably not reach that far." (3)*

As the two previous excerpts show, having to put extra time to search for the patient portal based source would significantly lower its usage indicating that merely having a source does not solve the issue of supporting men during the ante- and postnatal period. For the solution to work, it has to be person-centred in its form – easily found, user-friendly and logically structured. A person alone cannot be held accountable for not being able to gain information but the creator of the source as well.

Some described the preference to use a patient portal as purely an easier option than the ones currently available as doing so would save them the time of looking into multiple sources.

> *"Like if in the patient portal the whole source would be in one pot, then I think it would be much more acceptable versus me surfing on the web for hours and not being 100% sure what source I read and how reliable they actually are, right. So, a platform with everything pulled into one would definitely be better."* (5)

A few men stressed that a portal-based solution should keep in mind people's attention spans and its capacity.

> *"Yes, it should be intuitively so-called manageable, what is in what parts. Because if you put all that information together, then it is a mammoth of a source. So, it* (patient portal) *really has to have a good navigation system, directory system and search /.../. And here, well a huge obstacle is that for many people their attention span is about four rows long and 30 seconds, right. /.../. "*(1)

The given quote illustrates how having all the information put into one place in not a solution itself but depends on the structure and build of the source. The question is not about whether men are capable of finding information about the ante- and postnatal period, but how a systemic approach is necessary to help them feel supported stepping into the role of a parent.

One participant believed people would use the patient portal because they looked for something similar not too long ago but did not find anything of that sort currently available.

> *"I think there would be. /.../. I even tried to look for something like it* (a patient portal aimed at men) *at the hospital but there was nothing I found. "* (13)

This excerpt demonstrates the need for a place for men to turn to for information as the thought of one already existing seems so logical to people that they look for one but end up not finding nothing. The existence of a source aimed at men would be the way to engage men who could not be engaged before during the ante- and postnatal period.

> *"I would believe so, because honestly, definitely not all, but men are lazier by nature and do not look everything up. Honestly, it is often so with men that you have to stick the information under our noses and of course it would be good if sometimes some of that information would make it to the general media"* (8)

This quote shows that the creation of a patient portal could be bringing the most important information to the men, making the shared knowledge relatable and more widely talked about.

In summary, men would be interested in and willing to use a patient portal based solution for all their ante- and postnatal information needs. The requirements being that the source was well structured and easily available when searching for information on Google. Without those characteristics the idea of creating an information source aimed at men would fail to find any users.

5 Discussion

This chapter of the study will present a thorough discussion of the results, comparing the findings to previous studies and existing theories. Based on this, answers are given to the research questions.

5.1 Societal influence on men´s engagement during the ante- and postnatal period and its impact on topics which are considered important

The results of this study form a comprehensive insight into how multi-layered the topic of men´s support and engagement during the ante- and postnatal period is. The interviewees wanted to be a part of the ante- and postnatal period, sensing no apparent pressure to be involved by the society but did refer to the possibility of their attitudes having formed subconsciously based on generally accepted social norms and by the people who surround them. This result is confirmed by previous research, which states how based on different social norms across the world expectations for men's participation vary [21], highlighting the importance of understanding local norms when considering how to improve currently provided services for men or while creating new ones [21]. As such, research conducted on a country specific level is necessary to help initiate change and to support fulfilling healthcare policy goals.

Based on the present study, it can be pointed out that even though men do not feel pressure to be engaged from the society, they do sense being shaped by certain attitudes which surround them. Namely, the participants of this study referred to standards they had set individually, saying that not supporting one’s partner would represent an out-dated mindset involving the notion that a woman had to deal with all the family-related aspects alone. The interviewees agree with the contemporary approach of the ante- and postnatal period described in literature as well, which sees more and more men expected to participate actively at more than just the birth of their child, but also wanting to do it [13]. What was backed up both by the findings of this study and previous ones ,was that despite

changed expectations about men´s participation, the amount of information and support available to them still ranges from limited to in some ways non-existent [16]. Participants of this study have sensed peoples' general mind-sets becoming more inclusive of their involvement – the visual of a hands-on man being somewhat more common in media. But they still describe feeling like they are left to their own devices when it comes to supporting their and their partners needs during the ante- and postnatal period. Much of the amount of their participation currently depends on their personal level of willingness to be an active participant. Then again, in order for person-centred care to work it cannot fully rely on a person's willingness but has to find support from a system that encourages involvement.

Even though men describe feeling included, what they would like to see is more focus aimed at specifically engaging and supporting them during the ante- and postnatal period. This claim is also supported by previously published literature on family-centred care concepts, which also describe a need of truly integrating men into the maternity care process, which currently looks more profound on paper than in reality [30]. That could be achieved through educating society by making the men´s role more visible through national campaigns and media, showing the shift from previous norms, which saw men only as the breadwinner of the family, to now being an expected source of support for their partners with childcare as well. A more public discussion could lead to the creation of other necessary services as extra support was described as a necessity for both men who experience going through a normal ante- and postnatal period, as well as for men who happen to experience the ante- and postnatal period riddled with more complex issues. Implementing such interventions and support mechanisms can be a key to achieving national health policy goals aimed at person-centred care.

As men in Estonia consider being part of the ante- and postnatal period to be important, it also affects the scope of topics they deem necessary to educate themselves on about the whole process. The findings of this study show an array of topics men consider important during the ante- and postnatal period, which range from early foetal development in the womb to the delivery and up to suggestions on raising the child. For many of the participants the choice of topics stemmed from wanting to calm themselves, or their partner. The result is also backed up by previous research findings, where men described looking up topics so to gain the notion that things are fine or will get better [19]. The

incentive to look for information was either situational or to be prepared in advance. As the participants of this study referred to a sense of having to navigate through the ante- and postnatal period primarily on their own volition, the selection of topics and incentive to gain information can mostly be described to be the same. Currently, if men wish to be involved, it is up to them to figure out the information which supports their involvement. However, as a previous study conducted in Sweden found, neglecting topics important to men or not recognizing their importance may hinder men´s participation during the ante- and postnatal period [67]. These results indicating the importance of professionals recognizing men´s information needs, their willingness to seeks support and stepping in to help prospective fathers get reliable information as also mentioned by the WHO [18] to achieve a greater level of person-centredness.

In conclusion, the findings of this study show that the general norms of the society men live in, do to some extent dictate their engagement in the ante- and postnatal period, but mostly in a subconscious manner. Men in Estonia do not feel pressured to be engaged in the ante- and postnatal period by the society, but do sense being shaped by surrounding attitudes when it comes to adjusting to their new role as a parent. Currently, men´s willingness to be engaged directly relates with how included they feel, as there are no specific support systems in place which would cater to men´s information needs.

5.2 Men´s current use of information sources during the ante- and postnatal period

The results of this study found that men in Estonia mainly use the Internet to gain information on the ante- and postnatal period. That however does not mean that sources provided by the Internet are somehow the best, mostly it just comes down to currently being the best option men have at their disposal to find information somewhat relevant to their needs. Even though person-centred care describes offering accessible support regarding a person's needs and their surroundings [31],[32], the effect of any implementation of care concepts reaching further than a theory is left unseen, as men find themselves using Google to access everything, but having to get by with sources which are general in nature or mainly aimed at women. Previous research found a number of organizations using the term "parent" to make services appear to be inclusive, but still being focused at women [62]. Guidelines that are well defined on paper about integrating

men into the care process, do not currently find their way into mainstream healthcare practises, indicating a lack of person-centredness from the men's perspective. It has to be noted though, that just creating something aimed at men does not suffice. As stated in previous literature on how to improve person and family engagement – educating HCPs, gaining feedback, and improving services are the key for continued support [54],[55].

Though theory wise family-centred care encourages, prepares, and supports families to be actively involved in a care process [30], results of this study found much of men´s preparedness to depend on their individual skills when it comes to finding and using information sources during the ante- and postnatal period. It is worth stressing, that participants of the interviews were mostly with a higher level of education, so the result cannot be fully equated to the general public, but should indicate that if they expressed sensing shortcomings, so would many others. Be it digital versus non-digital, Estonian versus foreign sources, the results of the present study showed that men with a higher level of education, tech and language skills and a proficiency in health literacy found themselves in a more favourable position, when it came to navigating their participation during the ante- and postnatal period. The finding is confirmed by a 2017 OECD statement [38], which described digital solutions improving ease of access to health-related information but noting that if information continues to be hard to navigate, a digital solution alone will not make care models more person-centred. Therefore, to incite change, attention must be focused on the necessity of developing both health literacy and digital literacy skills [38].

Additional language skills give men access to a seemingly wider range of information but indicate to the need of providing context-specific information to men, as both cultural and healthcare systems-based differences in each country affect the nature of the content. The same was said about foreign materials being translated into Estonian. Purely translating the materials to boost the amount of information sources is not considered as the key to accessing knowledge as it may end up creating more confusion. This indicates that men in Estonia currently do not receive a high level of person- or family-centred care during the ante- and postnatal period as one of the main pillars of both the concepts is that care is culturally sensitive and informed in its context [30],[31],[32], which it visibly is not. Seeing how advanced skills in languages, health and digital literacy influence current information accessibility and use of health communication tools, it has to be kept in mind

that not everyone has similar skills. As such, the given results should be viewed in the context of the study sample.

Finally, the discussion about men´s current use of information sources during the ante- and postnatal period and its connection to care concepts cannot be left without considering the impact of the ongoing COVID-19 pandemic. The last two years have seen a change in how healthcare is provided [25], with maternity care providers restricting family access to services, making it hard to provide person- and family centred care [64]. The findings of this study showed that the extent to which men felt isolated or restricted from information access depended on whether they were first-time parents or not and whether they had had a childbirth experience before the COVID-19 pandemic began. The result is confirmed by an Australian study, which also found men to feel more isolated because of the pandemic rules, indicating to studies done previously, which described men feeling left out already in normal circumstances [66]. Based on this, it is assumed that the COVID-19 situation has only made the situation worse [25]. The latter is echoed by the present interviewees as men with 2 or more children expressed worry about isolation of especially first-time fathers. Showing how crisis situations have an effect on person-centredness and the ability to provide it, necessitating a systemic approach to avoid the possibility of this happening or to mitigate the severity of the effects of the crisis is paramount. The responsibility does not only lie with the men who look for information, but also with the system which provides the information and must strive to improve information exchange in crisis situations.

5.3 Men´s expectations regarding use of health communication tools directed at supporting their information needs

By understanding the current situation of men´s information needs during the ante- and postnatal period, the network of support and level of engagement, the present research turned its attention to understanding how to best support men through health communication. An absence is noted of relevant materials created with men in mind and the lack of a support system directed at taking care of their needs when becoming a parent and being one [16],[19]. Previous research outlining how men have been criticised for years for not being present, but now when they actually are present, it feels like the system has never been ready for them [62]. Similar findings were seen in the present research.

Alio has stated in his 2017 strategy for men´s participation in the ante- and postnatal process that for a service to the final user it is necessary to ask the right questions from the right people. To engage men in particular, suggestions are given to understand the target audience, to create a space that is welcoming to the men´s participation, where they feel included and where professionals have been provided with the right tools and education to engage them. Those steps are followed by creating an outreach strategy, which must start with an engaging message and include supportive activities that at the same time acknowledge what resources are already available. The last step involves constantly gathering feedback [17]. In order to start on the path of using health communication as a mediator to engage men during the ante- and postnatal period, the present study investigated what types of solutions men saw as a way to convey information to them. Participants considered the web and specifically a directed webpage to be the best channel for health communication. Though, they did not suggest it as the one and only solution. Many mentioned the need for a multifaceted approach because a one-size-fits-all solution is not the right way to go about trying to support men´s information needs during the ante- and postnatal period. One would need different types of sources and information, presented by different stakeholders to put together the large picture.

Several participants outlined the need for gradual and "human-language" guidance for men because the current state of information exchange would, in the participants opinion, require knowing a specialist personally to make sense of even the basic processes that go on in the hospital, leaving an average person without adequate information. Generally, the use of hospital homepages to convey information to men was seen as an acceptable solution, with a separate section that includes information for them. The latter proving how currently provided information does not follow family-centred care principles as the focus is narrowed on women. Changes implemented here would also follow the recommendations of the WHO, which have stressed the need for solutions created by health professionals, which would include reliable information on fatherhood, covering a range of topics [13],[18]. Previous findings [56] observed that a website which covered the span of both the ante- and postnatal period was considered useful by the men who tested it, with three quarters of the participants saying they would use it themselves and recommend it to others. Important key factors for the website to appeal to the men were

topics which interested them, and that the information was displayed in a visually easy to comprehend manner [56].

Current findings also indicate that family school courses designed with men as a focal point were a close second to the website. For the participants family school courses offered a direct way of communicating with specialists and also presented a possibility to help them introduce and explain their perspective to their partners in a more believable manner. Both the on-spot and e-versions having their specific pros and cons, with the e-learning version tapping into the benefits which eHealth solutions offer, such as providing the service to harder-to-reach populations [56] like families in smaller regions with a limited level of service provision. This result indicates to the necessity of a multifaceted approach as one solution does not fit everyone.

In addition to men talking about their own visions of how health communication could be a mediator for their engagement, the participants of the present study were also prompted to think about whether they would use a patient portal based solution for their information needs if the opportunity were presented to them. The results found that men would be more than happy to use such a solution but described user friendliness and ease of access as important characteristics for a specific source aimed at men. The usage of a patient portal based solution would also depend on how well presented the search result would be. Having to put extra time to search for the patient portal based source would significantly lower its usage indicating that merely having a source does not solve the issue of supporting men during the ante- and postnatal period. For the solution to work, it has to be person-centred in its form – easily found, user-friendly and logically structured. As the results highlight, a person alone cannot be held accountable for not being able to gain information but the creator of the source as well. These findings are also confirmed by previous literature – one needs to know their target audience to create a service for them to use [17]. Just collecting all sorts of information into one place and leaving it there is not a solution. The question is not about whether men are capable of finding information about the ante- and postnatal period, but how a systemic approach is necessary to help them feel supported stepping into the role of a parent. To some participants the first steps on that road could just include more marketing towards men´s inclusion during the ante- and postnatal period. Media that would be visible to all, telling men they are more than welcome to ask questions and support their information needs.

To sum up, the problem of supporting men during the ante- and postnatal period has never been about whether they manage to find information. They are currently capable of getting by with what they are offered. But they do expect more and frankly they should be offered more support based on previous findings which have confirmed the benefits person- and family centred care principles and engagement tactics can have on both long and short-term outcomes for men themselves, their partners, and children. Knowing what men consider as helpful solutions, is the step in the right direction to make maternity care in Estonia more person- and family-centred.

5.4 Main contribution

The study contributes by offering a more comprehensive overview on how to support men during the ante- and postnatal period through means of health communication. As there have been no previous studies into understanding how to support men, the current findings offer the first steps to be able to provide supportive services to them. Specialists need to actually know their target audience to create a service for them to use [17],[25]. With previously published studies and the present results often referring to men feeling left-out during the ante- and postnatal period, it indicates to person-centred care not being practiced in reality. Consequently, the present study gives contribution by highlighting problems which need to be addressed in order to facilitate a systemic approach to supporting men during the ante- and postnatal period. Special attention is brought to the COVID-19 pandemic, showing how crisis situations have an effect on person-centredness and the ability to provide it, it being paramount to develop a systemic approach to avoid the possibility of service discontinuation or to mitigate the severity of the effects of this or any healthcare crisis.

5.5 Limitations

The sample group of the study may largely represent men who are more competent in the field of social media and technology use as the study invitation was shared through various Facebook groups. At the same time the topic of the study is most relevant among younger people, whose day-to-day life does in one way, or another, involve the use of smartphones, computers, and social media platforms. The methods used for the selection

of the participants were a combination of purposive sampling and convenience sampling, which does pose a possibility of the final sample not being as diverse and representative of the general population. Like participants mainly coming from Harju County, who do not need to think about possible worries such as reaching a hospital in time for a child's delivery. So, because of the methods of selecting the sample group, there did exist a possibility of the final study group also consisting of people with similar background information like the inclusion of men with higher education, better tech and health literacy skills. Even though the possibility to make generalisations is limited, discontent with the current level of support available during the ante- and postnatal period in the sample group may indicate the situation being even more dire for men with a lower skillset.

As all of the participants were Estonians by nationality but based on data from 2021 24,3% [85] of the Estonian population is made up of people identifying themselves to be from the Russian nationality, this study cannot make any general population based or nationality-based assumptions. The current research acknowledges that the cultural background and language barriers may set differences in the amount of information available and necessary topics which will not be covered in the scope of this study.

5.6 Future research

As the present study focused on men´s experiences during a normal ante- and postnatal period which meant that the pregnancy, birth, and postpartum period were not met with any complication acquiring extra medical attention, further research should be done with men whose experiences in one way, or another required more assistance. As mentioned in chapter 3.2, situations which deviate from the ordinary or are pathological in nature when it comes to maternity care bring with it a more specific need of information and counselling. As study invitations were shared for the present research, a number of men who did not fit the inclusion criteria wished to share their experiences, which indicates to the necessity of further understanding men´s experiences and how health communication could serve as a mediator to improve their journey to becoming a parent. Furthermore, as certain results of the present study can only be viewed from the context of the sample group, a wide-research among men with different socio-demographic backgrounds is necessary to identify potential gaps and areas of improvement to support individual responsibility and person-centredness.

5.7 Final conclusions

Based on the findings of the present study the following conclusions can be drawn:

1. Men in Estonia sense that attitudes towards participation in the ante- and postnatal period are influenced by surrounding social norms. The level of information, support and engagement men currently face during the ante- and postnatal period is dependent on their own willingness to seek it out.

2. Men in Estonia mainly use the Internet to gain information. Though, independently navigating information available to them and understanding it currently requires advanced skills in source criticality, as well as digital and health literacy. There are little to no sources of information aimed at men, referring to a lack of person-centredness when it comes to supporting them.

3. The COVID-19 pandemic has had an impact on the current capacity to support men, necessitating a systemic approach to avoid the possibility of this happening in the future or to mitigate the severity of the effects of this crisis. The responsibility does not only lie with the men who look for information, but also with the system which provides the information and must strive to improve information exchange in normal and crisis situations.

4. Helping men feel supported stepping into the role of a parent generally requires a systemic approach not a single one-time solution. Person-centred care mediators require constant management and support. Alone the creation of something or gathering information into one place does not suffice.

5. Health communication tools can serve as a mediator to support men during the ante- and postnatal period, as men described the potential of media campaigns, family school lessons, websites, and eHealth solutions as possible ways to convey information to them, which is created with them as a focal point. For the solutions to work, they have to be person-centred in their form – easily found, user-friendly and logically structured.

6 Summary

The aim of the thesis was to identify information sources men in Estonia currently rely upon regarding the ante- and postnatal period, both to understand possible areas of development and the potential application of health communication tools to support men in ante- and postnatal care. The author of the present study conducted semi-structured interviews with men who met the inclusion criteria of the study, to gain knowledge on how men currently perceive finding information during the ante- and postnatal period and how to best support them in the future.

First, the interviewed men sensed their attitude towards participation in the ante- and postnatal period be influenced by surrounding social norms but felt left to their own devices to navigate through parenthood, as there are no targeted support systems in place.

Secondly, men mainly use the Internet to gain information. There is little to none, which is aimed at informing men. Currently navigating the constant flow of information made available through digital means requires a wide range of skills such as source criticality, languages, health and digital literacy. The COVID-19 pandemic has more than ever highlighted the necessity of developing a systematic approach for supporting men.

Thirdly, health communication can serve as a mediator to support men during the ante- and postnatal period but created solutions must be person-centred in their form – easily found, user-friendly and logically structured.

In conclusion, a systemic approach should be developed to support men during the ante- and postnatal period regardless of a healthcare crisis or not. Implementing person- and family centred care engagement tactics can have positive long and short-term outcomes for men themselves, their partners, and children. Knowing what men consider as helpful solutions, is the step in the right direction to make maternity care in Estonia more person- and family-centred.

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Appendix 1 – Study Invitation

Hello!

We invite you to take part in a study, the aim of which is to describe information sources that are currently available for men during the ante- and postnatal period (the time periods before and after the baby is born). We wish to hear your opinions on the reliability of currently available sources and what in your point of view is missing. You are welcomed to take part in the study if **you are a man who is at least 21 years of age and:**

- ✓ Your partner is at least 28. weeks pregnant and the pregnancy is without complications (none of the tests or scans have indicated any deviations from normal, which would require the woman to be monitored by a doctor)

  OR
- ✓ You have become a father in the last 5 years, your partners pregnancy and birth of the child were normal, the baby was born vaginally after 37. weeks of pregnancy and did not need any additional medical attention.

For this study we ask you to take part in an individual interview conducted on Microsoft Teams which will take place in December 2021 or January 2022 and will last for approximately 40-60 minutes. Your experiences are important to us, as they provide the information necessary to improve supporting families during child expectancy and child rising as well as allow to better educate professionals on how to consult families as unit. Participation in the study is voluntary. This study will be a master's thesis in digital health done at the Tallinn University of Technology.

If you wish to participate in the study or have any further questions, please contact:
Hanna-Maria Trei, hantre@ttu.ee

Appendix 2 – Informed Consent Form for the Participants

Dear participant!

Thank you for agreeing to take part in this study, the aim of which is to describe information sources that are currently available for men during the ante- and postnatal period (the time periods before and after the baby is born). We wish to hear your opinions on the reliability of currently available sources and what in your point of view is missing. This study will be a master's thesis in digital health done at the Tallinn University of Technology and will serve as input material for the Estonian Ministry of Social Affairs with the development of the patient portal in Estonia. The health portal being a renewed digilugu.ee conception with extended functionalities and an improved user experience. Its aim is to create a single access point for users to gain an overview on health-related information and to be a two-way connection point for specialists and people.

For this study we ask you to take part in an individual interview, which will take place during the period December 2021 – January 2022 via Microsoft Teams. People who have demonstrated willingness to participate will be contacted to place a date and time for the meeting. The interview will last around 40-60 minutes depending based on the extent of your answers. This study has gained approval from the Research Ethics Committee of the National Institute for Health Development. Participation in the study is voluntary. Taking part in the study and the answers given will not affect the level of maternity care offered to you or your partner. You have a right to opt out of the study at any moment. If you are willing to participate in the study, you will be asked to give consent. Consent can be given digitally. By signing the informed consent form, you confirm that you have understood the nature of the study, meet the necessary criteria to take part in the study and agree to the recording of both video and sound of the interview in Microsoft Teams. The informed consent forms will be stored in the TalTech OneDrive cloud server, which is password protected and accessed only by the author of the study and their supervisor. At the end of data collection (January 2022) the signed consent forms will be deleted. In the analysis part all collected data will be used impersonally, meaning that nowhere in the final paper will personal information collected about you be used. Each participant will be represented by a number. Impersonal data will be used in the analysis part of the study, in the master's thesis and future publications.

All of the interviews are stored on the Tallinn University of Technology OneDrive cloud server and will be transcribed verbatim. Full interviews will not be used in any of the materials. Also, none of the recordings or full text files will be shared on the Internet. For the data analysis phase your complete opinions will be used but never the full texts of the interview. In the master's thesis only quotes from your interview will be used. All results will be presented in a generalized manner both in the master's thesis and in future publications. Data will not be relayed to third countries or counterparts or be uploaded into any available databases. Files on data analysis may be released, but only if such a step is necessary in the process of publicising. In such an instance data will be sent through a password protected cloud server and only after an individual request for such data has been made.

Videos will be stored up until the end of the transcription process and will be deleted from the server after that. The transcribed full texts of the interviews will be stored up until 5 years, raw analysis materials up until 10 years after the end of the study after which they will be deleted. This is done to allow for the publication of results.

Giving consent

I,……., have been informed of the above study and am aware of the aim, inclusion criteria and methodology used in this study and give my consent to participate in the study and for the processing of my personal data with a digital signature. I am aware, that in case of any further questions or problems, I can gain additional information from the author of the study:

Hanna-Maria Trei, hantre@ttu.ee

Appendix 3 – Interview Plan

Theme	Question	Extension	Time
Background data and men's information needs	How old are you?	If they have a child: How long ago was the child born? They are going to have a child: How far along is their partners pregnancy?	20 min
	What is your county of residence?		
	What is your nationality?		
	Do you have children or are you going to have a child?		
	What topics do you consider to be important concerning pregnancy and the period after the baby is born?	Why do you consider these topics important? What does knowledge about these topics give you? What type of situations drive you to look for information?	
	What types of information sources (hospital websites, blogs, Perekool/other forums, articles, social media groups, applications, shows, videos, films, podcasts, books, family school lessons) have you personally used that relates to pregnancy as well as the period after the child is born?	Why have you used/preferred these sources? Which do you prefer now, digital information sources or other solutions to gain information? If you can choose between a website or an application, which do you prefer? Estonia has one application which has been created with the focus on pregnancy. What have you heard about it?	
Information availability and reliability	Describe, how do you evaluate information availability which is specifically directed at men that relates to pregnancy as well as the period after the child is born?	If you have a question, where do you turn to first to look for an answer? Are there any information sources about which you know but have not used personally? Why is that so? What are the topics on which information is totally lacking?	25 min
	In your opinion, what type of problems are there with information availability?		

	In your opinion, how has the COVID-19 pandemic affected information availability that relates to pregnancy as well as the period after the child is born?	What other sources of information do you know about, from who have you gained information? How reliable do you consider this information to be? What guarantees reliability for you? In your opinion information is reliable when it is gained from where or from who? When you think about information searches you have done up until now, have you found answers to your questions? When you think about your friends and colleagues, in your opinion, would they give similar feedback? What may be a problem/help for other men like you? What type of foreign sources/applications have you used? In how many languages do you search for information?	
A digital information source directed at men	In your opinion what type of solution/channel is the best way to share information with men that relates to pregnancy as well as the period after the child is born?	To what extent do you as a man sense pressure from your family or the society to be included? If it is/ is not so, why do you feel that way?	15 min

	If information for men would be made available in one place such as the patient portal, would you prefer it to other sources? Why or why not?	If you think about all the information available to you currently, to what extent do you feel like you can be a part of the process in a manner that you wish to be? If there is something that you wish to add to this interview, you are free to do so now.	

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