

CONNECTED PUERPERIUM IN PORTUGAL: A DIGITAL SYSTEM FOR AN INTEGRATIVE POSTPARTUM CARE

Carla V. Leite^{1,2}, Tala Al Shrbaji³, Hannakaisa Niela-Vilen², Ana Patrícia Oliveira¹
and Rita Oliveira¹

¹*DigiMedia, Department of Communication and Art, University of Aveiro
Campus Universitário de Santiago, 3810-193 Aveiro, Portugal*

²*Department of Nursing Science, Faculty of Medicine, University of Turku
Medisiina B6, FI-20520 Turku, Finland*

³*School of Health Sciences, University of Aveiro
Campus Universitário de Santiago, 3810-193 Aveiro, Portugal*

ABSTRACT

The goal of this research was to conceptualise a system that answers to an emerging health care need: connecting women during puerperium with different users, namely: midwife, obstetrician, paediatrician, breastfeeding consultant, physical therapist, family nurse and doctor, psychologist, and informal caregiver. Those are the stakeholders, along with her family and the Portuguese Health System, since the implementation of this system could improve women's health and well-being, reduce costs with obstetric, psychiatric and general healthcare, and contribute to the positive after birth experience and breastfeeding rates, since: it enables the communication of women with different users of the system and between them; it allows them to upload up to date data/results/exams, accessible by different users who might need it for a customised and integrative diagnosis/treatment; and, it is accessible online, allowing women's constant and physically distant follow-up. The use cases diagram and flows of the system, along with the interface design of a mobile app were created.

KEYWORDS

Postpartum, Puerperium, Digital, Mobile App, eHealth

1. INTRODUCTION

Pregnancy is considered a time of great transformation, but both physiological and psychological changes continue after birth in the postpartum period. A woman's body begins to recover from the pregnancy-related changes, while many health problems may also occur. Pain, abnormal discharge, urinary complications, or mood disorders, for example, are common symptoms for new mothers (Yonemoto et al., 2021). The duration of the postpartum period is not consensual, sometimes being defined as six weeks, and other times as the 12 weeks period after the birth, also referred to as the "fourth trimester" (Womersley et al., 2021; Verbiest et al., 2018). The early postpartum period appears to be the most stressful time concerning the transition to motherhood (Almalik, 2017; Tully et al., 2017). Yet, antenatal and intrapartum care are prioritised over the postpartum period (Womersley et al., 2021), with the latter being reported for a decade as the most neglected period for the provision of quality care, especially in resource-limited settings from low- and middle-income countries (WHO, 2014).

The care of a woman and her infant in the first weeks after birth is regulated differently among distinct countries. In general, the postpartum hospital stay is short and little information is provided regarding that period. The current situation in Portugal, to the best of our knowledge, is that no track of which information regarding postpartum is being delivered to soon to be parents; after birth, followed by discharge, there is no interaction or follow up from the public hospital nursing team. When no complications or risk situations are diagnosed, the first and single puerperium appointment with a Family Physician and Nurse Practitioner will happen between the 4th and 6th week after the birth (SNS, 2015). Moreover, there is no online system to

facilitate the communication and interaction between new parents and public healthcare professionals regarding questions that might arise after birth (e.g., newborn care, breastfeeding, puerperium care, etc.).

Although Doula and Breastfeeding Consultant support might be necessary to mother-baby bond and to establish breastfeeding (Brooks et al., 2016), they are not regulated professions by the Portuguese Healthcare System, but there are established networks and online lists and databases of private providers, some with International Certification and some doulas specialised in the Postpartum period (e.g. for doulas: <https://www.redeportuguesadedoulas.com>; <https://www.doulasdeportugal.com>; <https://doular.org>; e.g. for Breastfeeding Consultants: <https://www.apclc.pt>; <https://www.camsdeportugal.pt>).

Currently, the generalised options to attempt to find answers through the public sector are: calling, sending an email or going in person to the health centre they belong to in order to schedule an appointment; going to the hospital or maternity units in person for an emergency consultation - which might not be the best policy if it's not an emergency due to the risk of exposing the newborn and recovering mom, and to keep the focus and priority in the services; or, calling the 24/7 national call centre to talk to a nurse (DGS, 2023; ERS, 2021). Clearly, these services are conditioned by waiting times, service schedules and/or staff availability. Notwithstanding, there is a 24/7 video call and web chat service for the deaf population in order to be able to communicate with nurses or administrative staff (SNS 24, 2023).

Furthermore, there is no digital system assuring the connection between, and among, the tertiary sector (e.g. private medical physicians, physical therapists, doulas, nurses, breastfeed consultants, psychologists, etc.) and the patient information collected by the national healthcare system over the years. The new parents need to fill in/tell their clinical history in each private practice/office, and to carry their exams and analysis results, medicine prescriptions and guides of treatment.

Effective follow-up systems for postpartum women should be considered essential to be put in place, as many pregnancy-associated problems, such as gestational diabetes, anxiety, or depressive symptoms can continue to affect women's health in the long term (Womersley et al., 2021). Mobile health apps are suggested as a complementary support for parents in the postpartum period. However, the quality of commercially available apps varies and not all provide adequate health information, nor are customised (Tucker et al., 2021). Postpartum care should be based on a woman's individual needs and concerns. Proactive health services are needed after hospital discharge to ensure continuous support (Almalik, 2017). Tailored and timely information using different methods, such as handouts, texts, and discussions, would support mothers better than a single health care visit (Verbiest et al., 2018).

2. METHODS

The aim of this research was to conceptualise a system to comply with the *Rights to Information and to Healthcare Access* (WHO, 2019; United Nations, 1995) for the Portuguese residents, in order to facilitate the interaction of new parents with both physical and emotional care professionals. Consequently, the system can potentialise their self-care engagement during the postpartum period, in order to avoid commonly known physical and mental complications (Borghei et al., 2017).

The conceptualisation process counted with two phases: firstly, an exploratory phase which included an unstructured interview of two midwives, one breastfeeding consultant, two doulas, and three new mothers in Portugal, to understand how they are solving the underlying issue of lacking a digital platform focused on promoting the interaction between stakeholders during the puerperium period. Moreover, they also contributed to identify who could be the stakeholders. It was also asked about the data they would like to send/receive. With those inputs, a first draft of the use cases was created and analysed by an expert in healthcare systems. With the feedback obtained from the validation process, a final proposal of the system model was created using Use Cases, and they will be all presented far ahead.

Use cases (UC) are a structured representation of tangible interactions between users to achieve a goal (Douglass, 2016), inspired by real-life scenarios to which the digital world must provide an answer. The aim is to show the subsequent goals of the application and the possible roles of the user or other systems, making UC a highly relevant tool for user research and user experience design (Matz and Germanakos, 2016). This early step in the development process enables to involve human factors that will impact the requirements of the application (Liaghati et al., 2020). Use cases help answer fundamental questions: *What are the users of the system trying to do? What's the user experience?* (Rosenberg and Stephens, 2007), considering the

research scope it can be translated as: *What does the digital system need to do for puerperium women to be able to reach and get support?*. A single use case may group similar or related uses in only one diagram, including activities, sequences, and system states (Delligatti, 2013). By representing the system in diagrams, it is possible to start with a simple, user-based view, and build that in order to create all the necessary diagrams as complex as needed (Liaghati et al., 2020). UCs are not expected to unambiguously define into detail how the application is intended to be developed, but rather provide a simple, high-level representation of what the application is designed to accomplish (Liaghati et al., 2020). Software can be used to be effective, accurate, readable, and understandable to all project stakeholders, sponsors, and end users (Matz and Germanakos, 2016), so the online collaborative software Lucid (<https://lucid.app/>) was used. Moreover, UCs facilitate the creation of interfaces that can lead later to a highly usable prototype (Matz and Germanakos, 2016), so the last step of the project was to design the interfaces based on the proposed UC diagrams, OmniGraffle software (<https://www.omnigroup.com/omnigraffle>) was used.

3. RESULTS

It became clear that the interviewed participants were finding ways through email, messages and phone calls to keep in contact individually, but also their personal social media (i.e. Facebook groups) and group messages (i.e. Messenger, WhatsApp) were used so the new mothers could support each other and be in touch with their peers - met during the birth and parenthood preparation courses, events or workshops targeting pregnant women. They also wished to involve their family and the other parent/partner, highlighting branches of the issue initially hypothesised.

In order to achieve the proposed goals, the primary and secondary stakeholders of the system were defined, to be able to find the system actors and their behaviours through UML Use-case diagrams (UC1-6). The first ones were identified as: a) Postpartum women (UC1); b) Postnatal Specialists (UC2), such as: nurse, midwife, physical therapist, physician, breastfeeding consultant, doula, psychologist, etc., mainly who focus rather on prevention (ex: risk posture and behaviours), promotion (ex: active lifestyle), diagnosis, treatment, recovery (ex: musculoskeletal, neurological, respiratory), mental, emotional and/or physical (ex: breastfeeding techniques) support. The Secondary as: c) the Portuguese Health System, since better outcomes on postpartum care could mean improvements on women's general health, therefore less costs involved for different sectors on the long term; d) Family members & Close Friends (UC3), including the other parent of the newborn; e) General population, since it could affect the public perception of afterbirth, and ultimately the family planning potentiating birth rates. Furthermore, Online services from the Portuguese Health System such as RSE (Electronic Health Records) and Patient's Portal were services considered relevant to be connected and used as data bases for the proposed system (UC4 and 5, respectively). RSE can only be accessed by Nurses and Physicians (and no other profession) who work on the Portuguese Health System from the Ministry of health (public sector). They are also the agents that can access and update the Patient's Portal clinical data, and each citizen can consult it, although no specialised area for pregnancy, birth or postpartum exists or is made available when the time comes. The sixth identified actor is the system administrator, who controls and manages whatever deemed necessary in the back office (UC6).

3.1 Postpartum Woman (UC1)

This actor of the system is the woman experiencing the puerperium phase (UC1 - Figure 1), and she will be able to view, edit and add data related to the user account, profile and status. It will start with the creation of the account, the customization of the profile, and it will be possible to update their emotional, physical and psychological changes. The actor will also be able to manage Postnatal specialists in order to connect, contact and request an appointment. It will also be possible to manage appointments, for example, reschedule or cancel them. In addition, she will receive notifications about messages received, upcoming appointments and new user connections. This user will also be able to manage their family and close friends in the system, by connecting accounts and deciding on their permissions, i.e. what data they can view, edit and add about her.

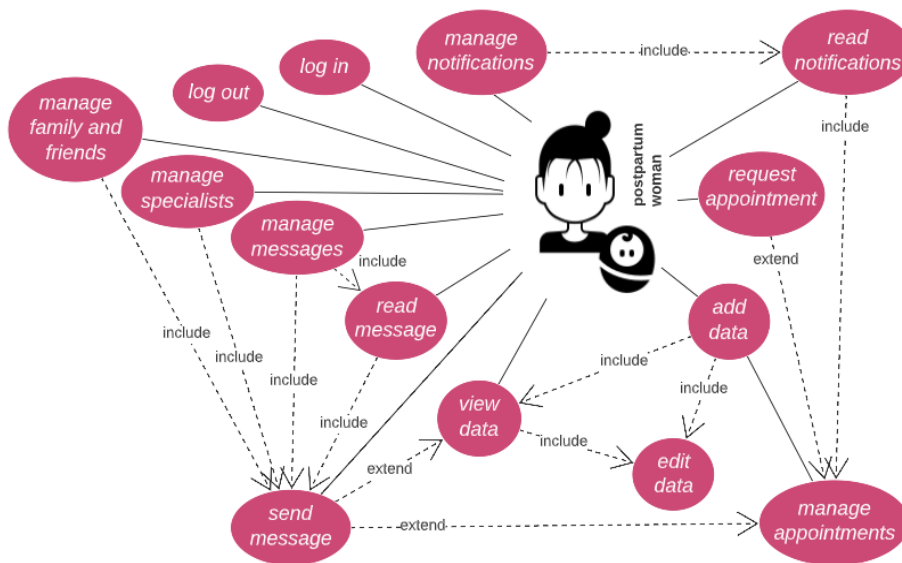


Figure 1. Use case of Woman during puerperium period (UC1)

3.2 Postnatal Specialist (UC2)

This actor is the Postnatal specialist (UC2 - Figure 2) focused on the care of women during the puerperium phase. The actor will create an account, view and edit their profile, which should include a description of its speciality, approach and care model they currently follow, experience, accomplishments and statistics (activity in the system, number of postpartum women under their care, their ratings, etc.). Although this role may be common to users from different academic and practical backgrounds, they are all professionals responsible for the emotional, physical, and psychological care of postpartum women. Since they are able to care for multiple postpartum women at the same time, they must have the ability to see them all, their statistics and status, and also select each one under their care to view, edit and add new data. This user will be able to exchange messages with other users, including postpartum women, along with their connected family and friends. It will be possible to schedule and manage their appointments, which will trigger notifications about the changes made in order to alert all the users involved.

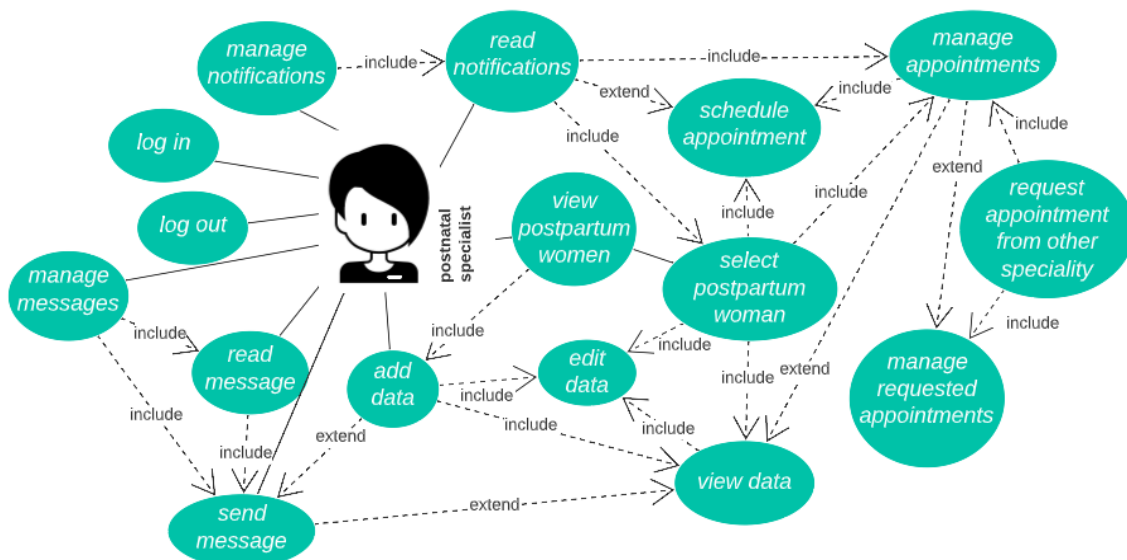


Figure 2. Use case of Postnatal specialist (UC2)

3.3 Family and Close Friends (UC3)

This actor represents a family member (i.e., the other parent, the partner, a parent, etc.) or a close friend of the postpartum woman (UC3 - Figure 3), so they can be included as her informal support network. They can check on her scheduled appointments that are shared with them, and report their availability to join her. They can also see who the postnatal specialists involved are, and can request appointments for themselves in case they need information to better support the puerperium woman (no clinical or private information should be shared, but rather general scientific knowledge, possible techniques, etc.). The actor will also be able to see the reported emotional, physical, and psychological changes that the puerperium woman has shared with them, and also report their support. They will be able to exchange messages with the users they are connected to, and receive notifications about changes or upcoming appointments.

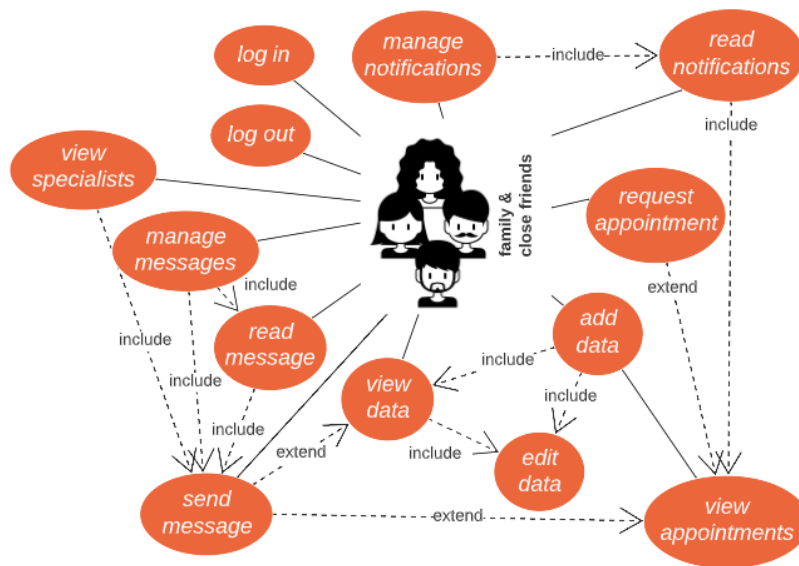


Figure 3. Use case of Family and Close Friends (UC3)

3.4 RSE (Electronic Health Records) (UC4)

This actor is a digital system used by the Portuguese Health System (UC4 - Figure 4), and its database gathers all the clinical information of each patient registered, including diagnosis, treatments, exams and analysis results. This information was created by or communicated to medical doctors and nurses from the public sector - currently the only ones with access to view, edit or add information to the system. Its approach is walled garden since patients or other professionals, including from private care, do not have access to view/edit/add data. However, this research takes into account the progress of adding Big Data to it, and strengthening the pipeline of digital healthcare services (Dash et al., 2019). With this visionary approach, this actor could feed the proposed application with valuable clinical information of each patient, and even relevant data from healthcare professionals, such as statistics.

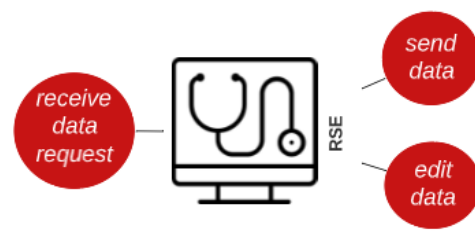


Figure 4. Use case of Electronic Health Records (UC4)

3.5 Patient's Portal (UC5)

This actor is an online system currently being used by Patients of the Portuguese Healthcare service (UC5 - Figure 5) in order to check the data updated by medical doctors and nurses upon appointments on the public service (i.e. health centres and hospitals), prescriptions from medical doctors from the private sector and work entries from clinical analysis/exams laboratories. However, currently there is no specific section regarding pregnancy or postpartum on the patient's portal (Leite and Almeida, 2021).



Figure 5. Use case of Patient's Portal (UC5)

3.6 System Administrator (UC6)

This actor (UC6 - Figure 6) is responsible for managing settings, messages, notifications, and also users when its intervention is needed. This actor is also who will be reached when there are any issues to solve within the system, and who will update the back office according to new developments and changes that may affect the system.

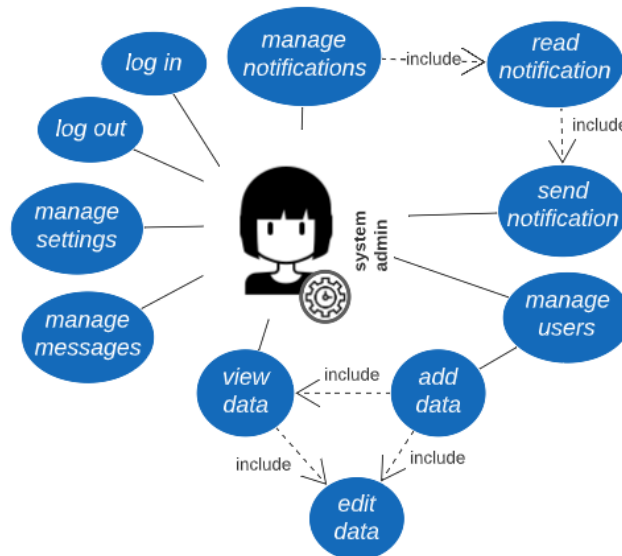


Figure 6. Use case of System Administrator (UC6)

3.7 Interfaces – Proof of concept

In order to illustrate how the use cases can be materialised visually to the users, interfaces of the mobile application were created, and took in consideration the predicted flux of events and usability principles, Figures 7-9 were included next.



Figure 7-9. Proof of concept of the action to connect to Postnatal Specialist as a Puerperium Woman user

4. DISCUSSION AND CONCLUSION

After extensive monitoring during pregnancy, a shift towards newborn care occurs after birth, and the women seem to face the postpartum period challenges without adequate support. They have reported learning needs regarding baby care, episiotomy care, and breastfeeding, and reported that maternal health services are not meeting them (Almalik, 2017), so they feel unprepared for postpartum (Martin et al., 2014). The single appointment with health care professionals is planned to happen only a few weeks after birth, and studies show the inadequacy of the postnatal check, and the dissatisfaction of women, expecting a more comprehensive approach as reproductive health patients (Womersley et al., 2021; Tully et al., 2017).

Future developments to this proposal could take into consideration that pregnant women and their caregivers' needs during the perinatal period were already reported as unmet regarding logistical, social, emotional, and informational (Robinson et al., 2018; Leite and Almeida, 2022), the proposed model could be modified to include both prenatal and postnatal periods - a possible contribution that was out of the scope of this project.

According to Ventola's (2014) framework, clinical practice can be transformed with the usage of technology that facilitates tasks such as information and time management, health record maintenance and access, communications and consulting, reference and information gathering, patient management and monitoring, clinical decision-making, and education and training. Mobile devices, such as smartphones and tablets, are highlighted since they are powerful tools from hardware to operating systems, and allow features regarding sound recording, voice and/to text, web search, location, and high-quality cameras. More recently, these increasingly sophisticated tools can also be part of the Internet of Things, connected to wearables, gadgets, ubiquitous devices, and smart home and interactive television sets - all sources of records and data that could be useful for health and wellbeing purposes (Grym et al., 2019).

However, to comply with clinical practice standards and to be integrated with health care services, the conceptualisation and validation processes need to be established, and measures to increase the quality and safety of the applications. The most common benefits of online health support to patients are convenience, reliability, health care availability, and cost savings (Almathami et al., 2020). Further, they can reduce travel time, waiting time in the clinics, and absences from work. It is also suggested that digital healthcare services may empower patients to participate more in their care (Ghimire et al., 2023).

Notwithstanding, healthcare providers may sometimes have ambivalent and sceptical attitudes toward digital health services, namely when including telemedicine approaches. Young healthcare professionals seem to recognise the potential of modern technology for care provision (Grassl et al., 2018; Niela-Vilen et al., 2020). Taking this into consideration, it became relevant to conceptualise a service not based on real-time interaction and for diagnosis purposes, but to enable the possibility of a timely interaction, that circumvents bureaucratic obstacles between stakeholders during the postpartum period. This way, postnatal specialists could be focusing on the quality of the encounter with new parents instead of tasks that technology can facilitate (Niela-Vilen et al., 2020).

By having a virtual space to meet puerperium women often, brief opportunistic advice to tackle issues like nutrition or tobacco consumption can also take place aiming behaviour changes. Visionary developments could make use of big data to detect behaviour patterns of puerperium women as users in order to provide them with timely and adequate suggestions aiming for support. The application can also be connected to

artificial intelligence systems that are trained for postnatal topics and to provide predictive answers to their questions. Moreover, puerperium women seem to wish to share their postpartum experience (Verbiest et al., 2018), so a social approach inside the application itself or social media connections might need to be integrated. Clearly indicate advantages, limitations and possible applications.

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REFERENCES

- Almalik, M.M., 2017. Understanding maternal postpartum needs: A descriptive survey of current maternal health services. *Journal of Clinical Nursing*, 26(23-24), pp.4654–4663. doi: 10.1111/jocn.13812.
- Almathami, H.K., Win, K.T. and Vlahu-Gjorgievska, E. (2020). Barriers and facilitators that influence telemedicine real-time online consultation at patients' home: A Systematic Literature Review. *Journal of Medical Internet Research*, 22(2). doi: 10.2196/16407.
- Borghei, N. S., Taghipour, A., Latifnejad Roudsari, R., Jabbari Nooghabi, H., 2017. Investigating the Determinants of Maternal Empowerment During Pregnancy: A Strategy for Prenatal Healthcare Promotion, *Journal of Midwifery and Reproductive Health*, 5(3), pp. 988-997. doi: 10.22038/jmrh.2016.7980.
- Brooks, E.C., Genna, C.W. and Mannel, R., 2016. The Lactation Consultant: Roles and Responsibilities, in Wambach, K. and Riordan, J. (eds.) *Breastfeeding and Human Lactation*, 5th ed. Burlington MA: Jones & Bartlett Learning, pp. 3-36.
- Dash, S., Shakyawar, S.K., Sharma, M. and Kaushik, S., 2019. Big data in healthcare: management, analysis and future prospects. *Journal of Big Data*, 6(1), pp.1–25. doi: 10.1186/s40537-019-0217-0.
- Delligatti, L., 2013. *SysML Distilled: A Brief Guide to the Systems Modeling Language*. 1st ed, Addison-Wesley.
- DGS, 2023. *Norma DGS, Norma: 001/2023, Organização dos cuidados de saúde na preconceção, gravidez e puerpério*. Retrieved: https://normas.dgs.min-saude.pt/wp-content/uploads/2023/03/norma_001_2023_org_cuidados_preconcecao_gravidez_puerperio.pdf.
- ERS, 2021. *Direitos e Deveres dos Utentes dos Serviços de Saúde*. Porto: Entidade Reguladora da Saúde. Retrieved: https://www.ers.pt/media/sfbd4x2h/publica%C3%A7%C3%A3o-ers_direitos-e-deveres.pdf
- Ghimire, S., Martinez, S., Hartvigsen, G. and Gerdes, M., 2023. Virtual prenatal care: A systematic review of pregnant women's and healthcare professionals' experiences, needs, and preferences for quality care. *International Journal of Medical Informatics*, 170, p.104964. doi: 10.1016/j.ijmedinf.2022.104964.
- Grassl, N., Nees, J., Schramm, K., Spratte, J., Sohn, C., Schott, T.C. and Schott, S., 2018. A Web-Based Survey Assessing the Attitudes of Health Care Professionals in Germany Toward the Use of Telemedicine in Pregnancy Monitoring: Cross-Sectional Study. *JMIR mHealth and uHealth*, 6(8), p.e10063. doi: 10.2196/10063.
- Grym, K., Niela-Vilén, H., Ekholm, E., Hamari, L., Azimi, I., Rahmani, A., Liljeberg, P., Löyttyniemi, E. and Axelin, A., 2019. Feasibility of smart wristbands for continuous monitoring during pregnancy and one month after birth. *BMC Pregnancy and Childbirth*, 19(1). doi: 10.1186/s12884-019-2187-9.
- Liaghati, C., Mazzuchi, T.A. and Sarkani, S., 2020. A method for the inclusion of human factors in system design via use case definition. 2(1-4), pp.45–56. doi: 10.1007/s42454-020-00011-1.
- Leite, C. V. and Almeida A. M., 2021, The Current Status of Online Resources from the Portuguese Health System for Childbirth Education. *2021 16th Iberian Conference on Information Systems and Technologies (CISTI)*, Chaves, Portugal, 2021, pp. 1-4, doi: 10.23919/CISTI52073.2021.9476461.

- Leite, C.V. and Almeida, A.M., 2022, e-Health Services to Support the Perinatal Decision-making Process: An Analysis of Digital Solutions to Create Birth Plans. *Proceedings of the 15th International Joint Conference on Biomedical Engineering Systems and Technologies (BIOSTEC 2022)* - Volume 5: HEALTHINF, pp. 405-412, doi: 10.5220/0010814600003123.
- Martin, A., Horowitz, C., Balbierz, A. and Howell, E.A., 2014. Views of Women and Clinicians on Postpartum Preparation and Recovery. *Maternal and Child Health Journal*, 18(3), pp.707–713. doi: 10.1007/s10995-013-1297-7.
- Matz, A. and Germanakos, P., 2016. Increasing the Quality of Use Case Definition Through a Design Thinking Collaborative Method and an Alternative Hybrid Documentation Style, in Zaphiris, P., Ioannou, A. (eds) *Learning and Collaboration Technologies*, Lecture Notes in Computer Science vol 9753, Switzerland: Springer, Cham, pp. 48-59, doi: 10.1007/978-3-319-39483-1_5.
- Niela-Vilen, H., Rahmani, A., Liljeborg, P. and Axelin, A., 2020. Being ‘A Google Mom’ or securely monitored at home: Perceptions of remote monitoring in maternity care. *Journal of Advanced Nursing*, 76(1), pp. 243–252. doi: 10.1111/jan.14223.
- Robinson, J.R., Anders, S.H., Novak, L.L., Simpson, C.L., Holroyd, L.E., Bennett, K.A. and Jackson, G.P., 2018. Consumer health-related needs of pregnant women and their caregivers. *JAMIA Open*, 1(1), pp. 57–66. doi: 10.1093/jamiaopen/ooy018.
- Rosenberg, D. and Stephens, M., 2007. Use Case Modeling, in: Use Case Driven Object Modeling with UML. Apress, pp 49-82, doi: 10.1007/978-1-4302-0369-8_3.
- SNS, 2015. *Programa Nacional para a Vigilância da Gravidez de Baixo Risco*. Lisboa: Direção-Geral da Saúde, ISBN: 978-972-675-233-2. Retrieved from <https://www.dgs.pt/em-destaque/programa-nacional-para-a-vigilancia-da-gravidez-de-baixo-risco-pdf11.aspx>.
- SNS 24, 2023. *Contacto acessível para cidadão surdo*. Available at: <https://www.sns24.gov.pt/contacto-acessivel-cidadao-surdo/> [Accessed 28 May 2023].
- Tucker, L., Villagomez, A.C. and Krishnamurti, T., 2021. Comprehensively addressing postpartum maternal health: a content and image review of commercially available mobile health apps. *BMC Pregnancy and Childbirth*, 21(1), 311. doi: 10.1186/s12884-021-03785-7.
- Tully, K.P., Stuebe, A.M. and Verbiest, S.B., 2017. The fourth trimester: a critical transition period with unmet maternal health needs. *American Journal of Obstetrics and Gynecology*, 217(1), pp.37–41. doi: 10.1016/j.ajog.2017.03.032.
- United Nations, 1995. *Beijing Declaration and Platform for Action: Beijing+5 Political Declaration and Outcome*. Reprint, New York: UN Women, 2014.
- Ventola C. L., 2014. Mobile devices and apps for health care professionals: uses and benefits. *P & T: a peer-reviewed journal for formulary management*, 39 (5), pp. 356–364.
- Verbiest, S., Tully, K., Simpson, M. and Stuebe, A., 2018. Elevating mothers’ voices: recommendations for improved patient-centered postpartum. *Journal of Behavioral Medicine*, 41(5), pp.577–590. doi: 10.1007/s10865-018-9961-4.
- WHO, 2019. *WHO consolidated guideline on self-care interventions for health and well-being: Sexual and Reproductive Health and Rights*. Geneva, Switzerland: World Health Organization. Retrieved from: <https://apps.who.int/iris/bitstream/handle/10665/325480/9789241550550-eng.pdf>
- WHO, 2014. *WHO recommendations on postnatal care of the mother and newborn*. Geneva, Switzerland: World Health Organization. Retrieved from: https://apps.who.int/iris/bitstream/handle/10665/97603/9789241506649_eng.pdf
- Womersley, K., Ripullone, K. and Hirst, J.E., 2021. Tackling inequality in maternal health: Beyond the postpartum. *Future Healthcare Journal*, 8(1), pp.31–35. doi: 10.7861/fhj.2020-0275.
- Yonemoto, N., Nagai, S. and Mori, R., 2021. Schedules for home visits in the early postpartum period. *Cochrane Database of Systematic Reviews*, 2021(7). doi: 10.1002/14651858.cd009326.pub4.