

Research On The Design Of Home Health Care Products For The Elderly In The Background Of Wise Information Technology Of Med

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1. Introduction

Nowadays, Chinese society has an increasing proportion of elderly people and the serious problem of aging is unprecedented.(Wang. Y. & Zhao. S. X., 2014). Older people are at a high risk of developing chronic diseases, and this is becoming a killer of their health. Fortunately, the rapid development of smart technology offers opportunities for the treatment and management of chronic diseases in the elderly. The government has also introduced various relevant policies to reduce barriers and provide support for the development of smart healthcare. Despite China's booming economy and rapidly changing technology, the difficulty, hassle, and cost of treating chronic diseases remain a major issue.

In today's society, the causes of chronic diseases mostly depend on the patient's private lifestyle. One of the reasons for the exacerbation of chronic diseases is the weak health management skills of patients, many of whom do not develop good health management habits in their family lifestyle. There is therefore an urgent need to modify the poor behavior of elderly patients and to improve their health management abilities.

In order to make the study clearer, the main research questions are clarified in order to provide direction for the subsequent research. In addition, user data is more appropriately analyzed and this study describes the use of thematic analysis, which is one of the ways of analyzing data in qualitative research, and this study describes its analysis steps in order to provide a methodology for subsequent data analysis. As a relatively new research context, there is still a lot of space for research on smart healthcare, which is not only about the use and enhancement of technology but also about how the elderly living in this context can adapt and get used to this trend and give adequate care to help them live more comfortably in their old age. In addition, the

role of narrative theory in service design in the context of product design is used to illustrate how narrative theory can be used in service design.

Therefore , a different perspective of user-centered design, where the user is the subject of the design, helps to provide support for them to become familiar and accustomed to the use of smart medical products more quickly. In the end, on the one hand, this study provides a new way of thinking about the design of home healthcare products for the elderly, and on the other hand, it fills a research gap and provides a reference for future research.

2. Problem Statement

There is a widely recognized problem of older people being unable to adapt to technology and being overwhelmed by an increasingly intelligent living environment, let alone one in which they are ill. However, in the current environment, many medical products are now very technologically advanced and inevitably moving rapidly in an increasingly intelligent direction. Firstly, as science and technology are changing and being used in all aspects of life, older people are faced with problems that they have not experienced before, a growing number of problems in their lives, a sense of being overwhelmed by technology, a feeling of isolation, and an inability to prevent and control illnesses that have not improved with the advent of science and technology. Secondly, in the context of "Healthy China", the importance of improving health management for the elderly has long been recognized by all sectors of the community. It is undeniable that these products and theories have taken the position of older people and attempted to improve their quality of life, but the basic design direction is how these medical products can be adapted to the life patterns of older people and do not fundamentally address the issue of the ability of older people to manage their health. In the long term, these products have been left idle due to the limitations of not

being able to make older people adhere to them. In conclusion, a different way of thinking is needed to address the relationship between older people with chronic conditions and intelligent home health care products to ensure that older people are effectively managing their own state of health. The following research questions need to be addressed.

- ① How are home healthcare products in the context of smart healthcare developing and what is the progress? What are the trends in development?
- ② The major changes in the era of smart health are not only in the form of technological changes, but also have a more prominent psychological impact on older people with chronic illnesses, so what are these effects?
- ③ In addition, while there is a relevant part of research on user experience in medical product design research, the process of using the product is currently being focused on more in the context of home medical product research, in other words how to make the process of using the product more convenient for the user and minimize hindrances throughout the use process. However, some important factors that have been overlooked are the pre- and post-use studies of the product which have not received much attention from researchers and which are integral to the overall use of the product and therefore need to be considered as well so that a complete design for older people can be developed to the greatest extent possible.

3. Project Aims and Objectives

The long-term goal of this research is to design a home health care product and service tailored to the characteristics of elderly patients with chronic diseases in the context of smart healthcare. As the name suggests, the product is a hardware health care product designed for elderly patients with chronic illnesses. The service is an intangible design based on the health product, in which the stakeholders involved are

doctors, patients, patient's families, etc. The needs of all these stakeholders are taken into account and the needs are integrated. After all, these are the factors that will influence the health management of elderly patients with chronic diseases. What is finally presented is a complete service system for the health management of elderly patients with chronic diseases. The aim of the current study is to provide a comprehensive theoretical analysis and overview of the literature and the industry, as well as to analyze the needs of elderly patients from an alternative "user-centered" perspective. In particular, the study has the following sub-objectives.

- ① To provide a comprehensive review of the types of home healthcare products for older people and to analyze their advantages and disadvantages.
- ② The study analyses patient-specific health management target behaviors and summarizes and prevents behaviors that are detrimental to chronic disease management in the daily lives of older adults, based on the persuasion design concept in the field of psychology, in order to strengthen their motivation and mobility for health management and help them establish good health management habits.
- ③ Review the practice and research of persuasion theory in the design
- ④ Investigate and analyze the needs of elderly patients using questionnaires and interviews, and explore persuasion design probabilities for different types of patient demands.
- ⑤ This study addresses aspects of the adherence problem for health management, how to improve the usability of persuasive design, and find reliable solutions in conjunction with persuasive design.
- ⑥ In order to build a more effective "patient-centered" self-health management service system, it is necessary to integrate the current service resources for chronic disease

management and to design products and services that are suitable for the usage behavior of elderly patients with the help of smart medical technology.

The results of this study will have an impact on the reliance of elderly patients on health management products, effectively improving their health management capabilities to a certain extent, and will also be of value to designers of healthcare products for the elderly, in terms of providing a new way of thinking and adequate theoretical research in this area of design.

4. Data Analysis

In this study, I have used qualitative research so that thematic analysis can be used to analyze the data. Thematic analysis is a process of taking the content of the data collected and summarizing it into a number of themes. Through this approach, the researcher is supported to generate theoretical objectives based on the findings as it is more flexible and the researcher is allowed to adapt to the requirements of the research process. (Boyatzis. R.,1998). Recurring elements in the text can then represent themes, including claims, idioms, or contextual meanings, and thematic analysis is the process of reproducing these themes. The common themes that recur in the interview texts are the common themes that the researcher is looking for, so the whole process of analysis is not a one-line process, but a 'whole-part-whole' process that goes back and forth between text and interpretation.

The process of thematic analysis is divided into several parts.

- ① Getting familiar with the data collected. This is also an important part of the process of becoming familiar with the content of the interviews, for example, by converting the spoken word into text and using some speech-to-text software to reduce the time lost.
- ② Coding of data. This is where the initial coding can be done, either manually or using software such as NVivo.

③ Finding themes. If the coding is inductive, the themes will depend on the content of the data collected. For example, I interviewed an older user if he was asked about his perceptions of using home health care products. He replied, "I think home health care products are helpful to me, but I don't use certain features. And in many cases, I forget to use them, so the problem does not seem to be significantly solved". From this, it seems that the researcher could generate codes for this (e.g. useful, able to use, not used to).

④ Check the theme. After clarifying the themes, it is also necessary to ensure that there is not too much overlap between themes and also to think about whether certain themes are relevant to this research question, otherwise, to some extent, the results may be inaccurate.

⑤ Define and name the themes. This stage involves a more detailed analysis of each theme. Through further analysis, it is important to determine which aspect of the data is included in each theme. Next, define each topic with an appropriate name so that when it is seen, it can be intuitively understood what the topic is.

⑥ Following this stage, the findings should be written up, not just providing the reader with what the data is, but also breaking down the themes into categories, embedding them in an analytical narrative, and developing a framework that provides guidance on key factors and best practice approaches for home healthcare products for older people.

5. Methodology

The primary research method for this study is narrative research, with the subsequent design taking the form of a service design. The researcher (Clatworthy, S., 2011) believed that service design consists of five basic elements: the user (the sum of all stakeholders in the service), the touch point, the service delivery, the user's needs, and

the user experience. The user experience in service depends primarily on the process by which the user interacts with the service touch point. The two have some aspects in common; on the one hand, they form a story over time based on a chronological sequence and depend on back and forth nodes that ultimately form the overall service system, on the other hand, service design aims to provide a complete and well thought out user experience for the user, Pine & Gilmore in their book *The Experience Economy*(PINE. B. J, & GILMORE. J. H., 1999).

In order to think from the user's perspective, it is necessary to understand the user and the context in which they live, including their routines, social relationships, and values. When users narrate their own experiences, they bring valuable insights and information to the design, not only to learn about their real lives, opinions, and attitudes but also to help designers change roles and build empathy. Therefore, it is important to identify ways in which narrative methods can be used in the design:

① Understanding users through narrative. By putting users in their shoes and describing their stories and experiences in a relaxed and enjoyable environment, interviews not only capture explicit or implicit information and interactions but also help to uncover value and lead to fruitful design research(Wang. G. S., 2015). Of course, the researcher can also become one of the users and learn about their existing knowledge and experiences. A comprehensive understanding of all the specific touch points and interactions in the service process allows the user's behavior to be observed and communicated with in a timely manner. This can then be done by recording the user's words for later analysis, or by keeping a log of the user's experiences over a period of time, obtaining the researcher's consent to take photographs of their behavior and environment, which can then be collated, reviewed and summarized.

② Summary through narrative. As service design often involves a complex set of stakeholders, it is essential to sort out the relationships between the various actors. Visualization of persona archetypes and the location and relationships between stakeholders can be presented by means of user portraits and stakeholder maps. In addition, user journey maps are used to anticipate changes in the user experience over time and space. In this process, various behavioral manifestations and psychological appeals of the user are obtained, which are combined with persuasion theory models to obtain motivational factors, competence factors, and triggers of the user, laying the foundation for improving user health management through behavioral models. And when reshaping the user experience, the researcher can optimize key moments to lead the user to positive and positive emotions at the beginning and create a deep and memorable impression at the end to extend the user experience(Huang. W., 2019).

③Design, test and verify through narrative. The purpose of using narratives upfront to gain insight into user needs is to ensure that the improved service delivers the experience that users truly expect. With a clear understanding of the user's needs, the researcher needs to anticipate the future context of use and come up with new design concepts and ideas. Whether the product and service then deliver a better experience to the user requires testing and evaluation of the design concept using a service prototype. During this process, the researcher helps users to understand the objectives at each stage and records their feedback and feelings in a timely manner(Wang. G. S., 2015). In the end, the feedback is filtered and categorized and is an important reference for the continuous iteration and optimization of the service process.

6. Conclusion

This project proposal serves as a basis for research practice on the design of home healthcare products for the elderly in the context of smart healthcare, further explaining

the basic facts and importance of the research, as well as its contribution and theoretical enhancement to the related field. It further clarifies the problems to be solved and the objectives to be accomplished in this research, and on the basis of the milestones, plans what specifically needs to be accomplished to provide direction for future research. In the context of smart healthcare, products are evolving rapidly, and there is a need to design the process of how older people can easily use the products. In addition, a methodology for data analysis is described, illustrating how this methodology can be used in the context of the direction of the research and providing the conditions for subsequent data analysis. In addition, this study is not only about tangible services but also about intangible services, so the role of service design theory and related narrative design in service theory is used to analyze stakeholder factors and combine user needs to design products and services that are more appropriate to the usage behavior of older patients, thus generating a whole 'patient-centered' This will lead to a more effective 'patient-centered' self-health management service system.

7. Bibliography

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APPLICATION FOR ETHICAL APPROVAL

In order for research to result in benefit and minimise risk of harm, it must be conducted ethically. A researcher may not be covered by the University's insurance if ethical approval has not been obtained prior to commencement.

The University follows the OECD Frascati manual definition of **research activity**: "creative work undertaken on a systematic basis in order to increase the stock of knowledge, including knowledge of man, culture and society, and the use of this stock of knowledge to devise new applications". As such this covers activities undertaken by members of staff, postgraduate research students, and both taught postgraduate and undergraduate students working on dissertations/projects.

The individual undertaking the research activity is known as the "principal researcher".

Ethical approval is not required for routine audits, performance reviews, quality assurance studies, testing within normal educational requirements, and literary or artistic criticism.

Please read the notes for guidance before completing ALL sections of the form.

This form must be completed and approved prior to undertaking any research activity. Please see Checklist for details of process for different categories of application.

SECTION A: About You (Principal Researcher)

1	Full Name:	Ya Gao			
2	Tick all boxes that apply:	Member of staff:	☐	Honorary research fellow:	☐
	Undergraduate Student	☐	Taught Postgraduate Student	☐	Postgraduate Research Student ☒
3	Institute/Academic Discipline/Centre:	Art & Design			
4	Campus:	Swansea			
5	E-mail address:	2105341@student.uwtsd.ac.uk			
6	Contact Telephone Number:	07422543773			
For students:					
7	Student Number:	2105341			
8	Programme of Study:	Professional Doctorate Art & Design			
9	Director of Studies/Supervisor:	Robert			

SECTION B: Approval for Research Activity

1	Has the research activity received approval in principle? (please check the Guidance Notes as to the appropriate approval process for different levels of research by different categories of individual)	YES	☐	NO	☒
					Date
2	If Yes, please indicate source of approval (and date where known): Approval in principle must be obtained from the relevant source prior to seeking ethical approval	Research Degrees Committee	☐		
Institute Research Committee		☐			
Other (write in)		☐			

SECTION C: Internal and External Ethical Guidance Materials

	Please list the core ethical guidance documents that have been referred to during the completion of this form (including any discipline-specific codes of research ethics, location-specific codes of research ethics, and also any specific ethical guidance relating to the proposed methodology). Please tick to confirm that your research proposal adheres to these codes and guidelines. You may add rows to this table if needed.	
1	UWTSD Research Ethics & Integrity Code of Practice	☒
2	UWTSD Research Data Management Policy	☒
3	<i>[List any other relevant documents here]</i>	☒

SECTION D: External Collaborative Research Activity

If there are external collaborators then you should gain consent from the contact persons to share their personal data with the university. If there are no external collaborators then leave this section blank and continue to section E.

1	Institution					
2	Contact person name					
3	Contact person e-mail address					
4	Is your research externally funded?	YES	☐	NO	☐	
5	Are you in receipt of a KESS scholarship?	YES	☐	NO	☐	
6	Are you specifically employed to undertake this research in either a paid or voluntary capacity?	Voluntary	YES	☐	NO	☐
7		Employed	YES	☐	NO	☐
8	Is the research being undertaken within an existing UWTSD Athrofa Professional Learning Partnership (APLP)?	If YES then the permission question below does not need to be answered.	YES	☐	NO	☐
9	Has permission to undertake the research been provided by the partner organisation?	(If YES attach copy) If NO the application cannot continue	YES	☐	NO	☐

Where research activity is carried out in collaboration with an external organisation

10	Does this organisation have its own ethics approval system?	YES	☐	NO	☐
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If Yes, please attach a copy of any final approval (or interim approval) from the organisation (this may be a copy of an email if appropriate).

SECTION E: Details of Research Activity

1	Indicative title:	Research On The Design Of Home Health Care Products For The Elderly In The Background Of Wise Information Technology Of Med		
2	Proposed start date:	October 2022	Proposed end date:	March 2024
	Introduction to the Research (maximum 300 words per section) The continuing deterioration of the aging problem in Chinese society today is unprecedented in the history of today's population development. The high risk of chronic diseases among the elderly has become a major issue affecting their health. One of the reasons for the exacerbation of chronic diseases is the patient's weak health management skills. Therefore, there is an urgent need to adjust the poor behavior of elderly patients and improve their health management skills. In order to enhance patient's experience of using home health products and improve their health management skills, persuasion theory was invoked in this study. In addition to this, a preliminary investigation of smart healthcare and chronic diseases in the elderly and a theoretical study of the persuasive design was used to find the connection between persuasive design and elderly patients' health behaviors, laying the foundation for subsequent research on the design of home health products for the elderly in the context of smart healthcare. There is still much room for research on smart healthcare, as a relatively new research context, which lies not only in the use and enhancement of technology but also in how the elderly living in this context can adapt to this trend and give enough care to help them can spend their old age more comfortably. In addition, in terms of product design, a different perspective of "user-centered" design, where the user is the main subject of the design, will help them to adapt more quickly to the use of smart medical products. Finally, on the one hand, it is important to provide a new research idea for the design of home medical products for the elderly, and on the other hand, it fills the research gap and provides a reference for future research.			
3	Purpose of Research Activity In the context of smart healthcare, the treatment and management of chronic diseases in older people has not improved as a result of technological enhancements and changes. Through literature collection and analysis, the reasons for this were explored as poor awareness and inadequate management capacity of older people for chronic disease management. Firstly, this study was based on the concept of persuasive design in the field of psychology, combined with patients' specific health management target behaviors, to prevent and control the daily behaviors of older people that are not conducive to chronic disease management, to strengthen their motivation and action to manage their health and to help them establish good health management habits. Secondly, a survey and analysis of elderly patients are conducted to explore persuasive design opportunities for different types of patient needs. Finally, we will integrate the current resources of chronic disease management services and use the technology of smart medicine to build a more effective "patient-centered" self-health management service system. (this box should expand as you type)			
4	Research Question ① How are home healthcare products in the context of smart healthcare developing and what is the progress? What are the trends in development? ② The advent of the smart healthcare era is not only a technological change, but also has a more prominent psychological impact on older people suffering from chronic diseases, so what are these			

	impacts? ③In addition, in terms of design research, although there is also research on user experience, current research on home healthcare products focuses more on the process of using the product, in other words how to make the process of using the product more convenient for the user and minimize hindrances throughout the use process. However, some important factors that have been overlooked are the pre- and post-use studies of the product which have not received much attention from researchers and which are integral to the overall use of the product and therefore need to be considered as well so that a complete design for older people can be developed to the greatest extent possible. (this box should expand as you type)
5	Aims of Research Activity The long-term goal of this research is to design a home health care product and service tailored to the characteristics of elderly patients with chronic diseases in the context of smart healthcare. As the name suggests, the product is a hardware health care product designed for elderly patients with chronic illnesses. The service is an intangible design based on the health product, in which the stakeholders involved are doctors, patients, patient's families, etc. The needs of all these stakeholders are taken into account and the needs are integrated. After all, these are the factors that affect the health management of elderly patients with chronic diseases. What is finally presented is a complete service system for the health management of elderly patients with chronic diseases. The aim of the current study is to provide a comprehensive analysis and overview of the literature and industry-related products, as well as to analyze the needs of elderly patients from a "user-centered" alternative perspective. The results of this study will act to improve the reliance of elderly patients on health management products to a certain extent, and will also be of value to designers of medical products for the elderly, reflecting a new way of thinking and adequate theoretical research in the design of this aspect. (this box should expand as you type)
6	Objectives of Research Activity ① A comprehensive review of the types of home health care products for older people and an analysis of their advantages and disadvantages. ②This study analyses patient-specific health management target behaviors and summarizes and prevents behaviors that are detrimental to chronic disease management in the daily lives of older adults based on the persuasion design concept in the field of psychology, to strengthen their motivation and action for health management and to help them establish good health management habits. ③Review the practice and research of persuasion theory in the design ④Investigate and analyze the needs of elderly patients using questionnaires and interviews, and explore persuasion design opportunities for different types of patient needs. ⑤ To investigate the ways in which adherence to health management for older people with chronic diseases can be addressed through a persuasive design approach, and to improve the applicability of persuasive design to health management product systems for older people with chronic diseases. ⑥In order to build a more effective patient-centered self-health management service system, it is necessary to integrate the current service resources for chronic disease management and to design products and services that are suitable for the usage behavior of elderly patients with the help of smart medical technology. (this box should expand as you type)
	Proposed methods (maximum 600 words) The qualitative research used in this study allowed the data to be analyzed using thematic analysis. Thematic analysis is the process of summarizing the content of the data collected into a number of themes. This type of analysis supports the researcher in producing theoretical objectives based on the findings as it is more flexible and allows the researcher to adapt to the requirements of their own

	research process. (Boyatzis, 1998, p. 4) Themes represent elements that appear frequently in the text, including claims, idioms, or meanings in contextual contexts, and thematic analysis is the process of reproducing these themes. The recurring and common themes in the interview texts are the common themes we are looking for, so the whole process of analysis follows the 'whole-part-whole' process of going back and forth between text and interpretation. For example, converting the spoken language from the interview into text can be done using certain speech-to-text software to reduce time loss, which is also an important process for familiarizing yourself with the content of the interview. Software, such as NVivo, can be used to analyse user information. The primary research method for this study is narrative research, with the subsequent design taking the form of a service design. In order to be able to think from the user's perspective, it is necessary to understand the user and the context in which they live, including their routines, social relationships, and values. When users narrate their own experiences, they bring valuable insights and information to the design, not only to learn about their real lives, opinions, and attitude but also to help designers change roles and build empathy. Interviews allow users to put themselves in their shoes and describe their stories and experiences in a relaxed and enjoyable environment, where they can not only obtain explicit or implicit information and interactions but also help to uncover value and lead to fruitful design research. Of course, the researcher can also become one of the users and learn about their existing knowledge and experiences. It is possible to gain a comprehensive understanding of all the specific touch points and interactions in the service process and to observe and communicate with the user's behavior in a timely manner. As service design often involves complex stakeholders, it is essential to sort out the relationships between the various actors. User portraits and stakeholder maps can be used to present a visualization of role archetypes and stakeholder locations and relationships. In addition, user journey maps can be used to anticipate changes in the user experience over time and space. Afterward, with the user's needs clearly identified, the researcher needs to anticipate the future context of use and come up with new design concepts and ideas. Whether the products and services then deliver a better experience to the user requires testing and evaluation of the design concepts using service prototypes.
7	(this box should expand as you type)
	Location of research activity Henan Province, China
8	(this box should expand as you type)
	Research activity outside of the UK In the course of scientific research, they should strictly abide by the Copyright Law of the People's Republic of China, the Patent Law, the Code of Scientific Ethics for Science Workers (for Trial Implementation) promulgated by the Chinese Association for Science and Technology and other relevant national laws, regulations, social ethics, and academic ethics, adhere to scientific truth, respect the laws of science, uphold a rigorous and realistic academic style, be courageous in exploration and innovation, abide by professional ethics and safeguard scientific integrity. Researchers should abide by the following basic norms of academic ethics. ① Respect for research subjects (including human and non-human research subjects). In research involving human subjects, the legitimate rights and interests of subjects and their personal privacy must be protected and the right to informed consent safeguarded. ② The principle of honesty and objectivity is observed in the declaration of subjects, project design, collection and analysis of data and information, publication of research results, and recognition of the contributions of those involved in the research work. The collection and publication of data must ensure validity and accuracy, and the integrity, authenticity, and security of experimental records and data for examination. Research results and statistical data must be made public in a factual, complete, and accurate manner. Errors and mistakes in published research results should be disclosed and acknowledged in an appropriate manner.

	③ Cooperate honestly and rigorously with others. (f) Be patient and sincere in dealing with academic criticism and challenge. ④ Copyright is held by those who have made substantial contributions to the research results. Those who have only generally managed or supported the research project are not entitled to copyright. Collaborators should sign their names in the order of their contribution to the research results (except where there is a convention or agreement to do so). Signatories are responsible for their own contributions and should review and sign their names before publication. ⑤ Scientific research activities should not be used for improper gain. (viii) Not to use scientific research activities for improper gain.
9	(this box should expand as you type)

10	Use of documentation not in the public domain: Are any documents <u>NOT</u> publicly available?	NO	☒
		YES	☐
11	If Yes, please provide details here of how you will gain access to specific documentation that is not in the public domain and that this is in accordance with the current data protection law of the country in question and that of England and Wales. (this box should expand as you type)		

	Does your research relate to one or more of the seven aims of the Well-being of Future Generations (Wales) Act 2015?	YES	NO
12	A prosperous Wales	☐	☒
13	A resilient Wales	☐	☒
14	A healthier Wales	☐	☒
15	A more equal Wales	☐	☒
16	A Wales of cohesive communities	☐	☒
17	A Wales of vibrant culture and thriving Welsh language	☐	☒
18	A globally responsible Wales	☐	☒
19	If YES to any of the above, please give details:		
	(this box should expand as you type)		

SECTION F: Scope of Research Activity

	Will the research activity include:	YES	NO
1	Use of a questionnaire or similar research instrument?	☒	☐
2	Use of interviews?	☒	☐
3	Use of focus groups?	☐	☒

4	Use of participant diaries?	☐	☒
5	Use of video or audio recording?	☒	☐
6	Use of computer-generated log files?	☐	☒
7	Participant observation with their knowledge?	☒	☐
8	Participant observation without their knowledge?	☐	☒
9	Access to personal or confidential information without the participants' specific consent?	☐	☒
10	Administration of any questions, test stimuli, presentation that may be experienced as physically, mentally or emotionally harmful / offensive?	☐	☒
11	Performance of any acts which may cause embarrassment or affect self-esteem?	☐	☒
12	Investigation of participants involved in illegal activities?	☐	☒
13	Use of procedures that involve deception?	☐	☒
14	Administration of any substance, agent or placebo?	☐	☒
15	Working with live vertebrate animals?	☐	☒
16	Procedures that may have a negative impact on the environment?	☐	☒
17	Other primary data collection methods. Please indicate the type of data collection method(s) below.		
	Details of any other primary data collection method:	☐	☐
	(this box should expand as you type)		

If NO to every question, then the research activity is (ethically) low risk and **may** be exempt from **some** of the following sections (please refer to Guidance Notes).

If YES to any question, then no research activity should be undertaken until full ethical approval has been obtained.

SECTION G: Intended Participants

If there are no participants then do not complete this section, but go directly to section H.

	Who are the intended participants:	YES	NO
1	Students or staff at the University?	☒	☐
2	Adults (over the age of 18 and competent to give consent)?	☒	☐
3	Vulnerable adults?	☐	☒
4	Children and Young People under the age of 18? (Consent from Parent, Carer or Guardian will be required)	☐	☒
5	Prisoners?	☐	☒
6	Young offenders?	☐	☒
7	Those who could be considered to have a particularly dependent relationship with the investigator or a gatekeeper?	☐	☒
8	People engaged in illegal activities?	☐	☒
9	Others. Please indicate the participants below, and specifically any group who may be unable to give consent.	☐	☐

Details of any other participant groups: (this box should expand as you type)		
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Participant numbers and source Provide an estimate of the expected number of participants. How will you identify participants and how will they be recruited?		
10	How many participants are expected?	Sample size calculation is always an essential step during the planning of scientific studies. An insufficient or small sample size may not be able to demonstrate the desired difference, or estimate the frequency of the event of interest with acceptable precision. A very large sample may add to the complexity of the study, and its associated costs, rendering it unfeasible. Both situations are ethically unacceptable and should be avoided by the investigator. Based on the fact that this study is a qualitative study, I need to delve deeper into the information of the users and focus on the deep behind-the-scenes content rather than a lot of superficial and different data. So I will start the study with 5 participants and if I think that adding more participants will give me new insights while researching, then I will consider adding more participants until I no longer find new concepts. In other words, sample saturation has been reached. The number of participants should not exceed 20 overall. This facilitates my grasp of the study and my in-depth understanding of the user information. (this box should expand as you type)
11	Who will the participants be?	In this study, I based my research on service design theory, so according to the approach of service design theory, stakeholders need to be identified, so my target population needs to involve elderly chronic disease patients, patient's families, and hospitals. It goes without saying that older people are my target research population, while the patient's family and the hospital are the main factors that influence the health management of older people. So these three are inextricably linked. (this box should expand as you type)
12	How will you identify the participants?	Generally speaking, researchers need to know what they're looking for in order to find it. When it comes to finding the right user research participants, this means taking the time to figure out what their research question is and who, exactly, can best help them answer it. So my criteria for users are probably: 1. they are having their own hobby, whatever this hobby is, which will give me information beyond the user's daily life. 2. due to the setup of this study, the participants should be chronically ill and have used home health care products for no less than one year. 3. The geographical location is Henan Province in China. This province is not considered to be the most developed place, but it has a rapidly developing economy, a large population base, and many elderly people have children who are not around, so the questions are richer and to some extent, it is convenient for me to obtain information about the users. (this box should expand as you type)

	Information for participants:	YES	NO	N/A
13	Will you describe the main research procedures to participants in advance, so that they are informed about what to expect?	☒	☐	☐
14	Will you tell participants that their participation is voluntary?	☒	☐	☐
15	Will you obtain written consent for participation?	☒	☐	☐
16	Will you explain to participants that refusal to participate in the research will not affect their treatment or education (if relevant)?	☒	☐	☐
17	If the research is observational, will you ask participants for their consent to being observed?	☒	☐	☐
18	Will you tell participants that they may withdraw from the research at any time and for any reason?	☒	☐	☐
19	With questionnaires, will you give participants the option of omitting questions they do not want to answer?	☒	☐	☐
20	Will you tell participants that their data will be treated with full confidentiality and that, if published, it will not be identifiable as theirs?	☒	☐	☐
21	Will you debrief participants at the end of their participation, in a way appropriate to the type of research undertaken?	☒	☐	☐
22	If NO to any of above questions, please give an explanation			
	<i>(this box should expand as you type)</i>			

	Information for participants:	YES	NO	N/A
24	Will participants be paid?	☐	☒	☐
25	Is specialist electrical or other equipment to be used with participants?	☐	☒	☐
26	Are there any financial or other interests to the investigator or University arising from this study?	☐	☒	☐
27	Will the research activity involve deliberately misleading participants in any way, or the partial or full concealment of the specific study aims?	☐	☒	☐
28	If YES to any question, please provide full details			
	<i>(this box should expand as you type)</i>			

SECTION H: Anticipated Risks

	Outline any anticipated risks that may adversely affect any of the participants, the researchers and/or the University, and the steps that will be taken to address them.					
	If you have completed a full risk assessment (for example as required by a laboratory, or external research collaborator) you may append that to this form.					
1	Full risk assessment completed and appended?	<table border="1"> <tr> <td>Yes</td> <td>☐</td> </tr> <tr> <td>No</td> <td>☒</td> </tr> </table>	Yes	☐	No	☒
Yes	☐					
No	☒					
2	Risks to participants For example: sector-specific health & safety, emotional distress, financial disclosure, physical harm, transfer of personal data, sensitive organisational information					
	Risk to participants:	How you will mitigate the risk to participants:				

	(this box should expand as you type) physical, psychological and financial	Before the study starts, get them to sign a consent form that covers the purpose of my study, what the study is about and what they need to do and says that if there are questions they don't want to explain, their requests will be respected. Also, try to conduct the visit in a way that does not interfere with the older person's life, as they do not need to work, so the financial aspect will not have a big impact. However, the physical and psychological aspects are important and it is important to be patient and gentle when talking to them, guiding them gradually through the communication. Afterward, inform them that their real personal information will not be published. (this box should expand as you type)
3	If research activity may include sensitive, embarrassing or upsetting topics (e.g. sexual activity, drug use) or issues likely to disclose information requiring further action (e.g. criminal activity), give details of the procedures to deal with these issues, including any support/advice (e.g. helpline numbers) to be offered to participants. Note that where applicable, consent procedures should make it clear that if something potentially or actually illegal is discovered in the course of a project, it may need to be disclosed to the proper authorities	
	My research will not cover sensitive, embarrassing topics, but each participant has a different level of acceptance, and some have the right to refuse to explain if they feel they have questions they do not want to answer. If they do, I will reassure them that I will keep this information strictly confidential. (this box should expand as you type)	
4	Risks to the investigator For example: personal health & safety, physical harm, emotional distress, risk of accusation of harm/impropriety, conflict of interest	
	Risk to the investigator: Personal safety (this box should expand as you type)	How you will mitigate the risk to the investigator: The greatest risk to the investigator in this study was personal safety, as personal safety in an unfamiliar and closed environment was most prominent during the user study, as it involved entering the participant's home alone. In this case, the investigator needs to explain to those around them before entering the survey scenario so that the unexpected does not happen in time to remedy the situation, and hold a communication device during the survey to both maintain contact with the outside world and facilitate recording. When communicating, be gentle, calm, and kind to the participants. (this box should expand as you type)
5	University/institutional risks For example: adverse publicity, financial loss, data protection	
	Risk to the University: Data Protection (this box should expand as you type)	How you will mitigate the risk to the University: In this study, eventually, my thesis will be submitted to the University, so the University will need to keep my thesis data confidential, but I may state that some data can be published, so there is no major problem. (this box should expand as you type)
6	Environmental risks	

	For example: accidental spillage of pollutants, damage to local ecosystems	
	Risk to the environment: Changes in the participant's home environment <i>(this box should expand as you type)</i>	<i>How you will mitigate the risk to environment:</i> Inevitably, the environment in the participant's home will change as a result of my arrival, but I will not touch objects in the participant's home at will, and if I need to use something, I will do so with the permission of the user. Of course, I will try to protect it during use. <i>(this box should expand as you type)</i>

Disclosure and Barring Service				
	If the research activity involves children or vulnerable adults, a Disclosure and Barring Service (DBS) certificate must be obtained before any contact with such participants.	YES	NO	N/A
7	Does your research require you to hold a current DBS Certificate?	☐	☒	☐
8	If YES, please give the certificate number. If the certificate number is not available please write "Pending"; in this case any ethical approval will be subject to providing the appropriate certificate number.			

SECTION I: Feedback, Consent and Confidentiality

1	Feedback What de-briefing and feedback will be provided to participants, how will this be done and when? I will introduce the participants to what my research is about, the objectives of the study, and what they need to do. In addition, there are ways in which I collect data, such as audio recordings, etc. They will also be informed that they have the right to refuse if they mind certain things. When they agree, they will sign a consent form. If I have the results of my design, I will give them back the results of my analysis. On the one hand, this is part of their right to know, and on the other hand, it will provide me with some ideas and improvements for my research. <i>(this box should expand as you type)</i>
2	Informed consent Describe the arrangements to inform potential participants, before providing consent, of what is involved in participating. Describe the arrangements for participants to provide full consent before data collection begins. If gaining consent in this way is inappropriate, explain how consent will be obtained and recorded in accordance with prevailing data protection legislation. They will be informed that their information will be used for a specific and defined purpose. I will keep their data confidential and will not distribute it to the public. Later, when the data is used, their information will be kept anonymous. If they are unsure, I will delete their information once the design results are available. <i>(this box should expand as you type)</i>
3	Confidentiality / Anonymity Set out how anonymity of participants and confidentiality will be ensured in any outputs. If anonymity is not being offered, explain why this is the case. 1. Using password-protected files with secure, high-level passwords that are accessible only to investigator, and if must write r passwords down, store them in a secure place and make it as inaccessible to others as possible 2. Using encryption programs when information is sent over the internet to others involved in the research 3. Keeping a firewall and security programs on entire network at all times and ensuring these programs are continually being updated to protect against the latest threats

	4. Storing hands-on work in areas that are securely locked, including using drawers with difficult to break into locks 5. Apply codes that only investigator can translate to any identifying information <i>(this box should expand as you type)</i>
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SECTION J: Data Protection and Storage

	Does the research activity involve personal data (as defined by the General Data Protection Regulation 2016 "GDPR" and the Data Protection Act 2018 "DPA")?	YES	NO
1	"Personal data" means any information relating to an identified or identifiable natural person ('data subject'). An identifiable natural person is one who can be identified, directly or indirectly, in particular by reference to an identifier such as a name, an identification number, location data, an online identifier or to one or more factors specific to the physical, physiological, genetic, mental, economic, cultural or social identity of that natural person. Any video or audio recordings of participants is considered to be personal data.	☒	☐
	If YES, provide a description of the data and explain why this data needs to be collected:		
2	I need to record, and in the case of live interviews, it is an appropriate way to record only with the device in order for me to easily access user information and not lose key information. Of course, I will consult the participants before recording. After recording, the voice files are converted to text files for later data analysis and conclusion. <i>(this box should expand as you type)</i>		
	Does it involve special category data (as defined by the GDPR)?	YES	NO
3	"Special category data" means sensitive personal data consisting of information as to the data subjects' – (a) racial or ethnic origin, (b) political opinions, (c) religious beliefs or other beliefs of a similar nature, (d) membership of a trade union (within the meaning of the Trade Union and Labour Relations (Consolidation) Act 1992), (e) physical or mental health or condition, (f) sexual life, (g) genetics, (h) biometric data (as used for ID purposes),	☐	☒
	If YES, provide a description of the special category data and explain why this data needs to be collected:		
4	<i>(this box should expand as you type)</i>		

	Will data from the research activity (collected data, drafts of the thesis, or materials for publication) be stored in any of the following ways?	YES	NO
5	Manual files (i.e. in paper form)?	☐	☒
6	University computers?	☐	☒
7	Private company computers?	☐	☒
8	Home or other personal computers?	☒	☐
9	Laptop computers/ CDs/ Portable disk-drives/ memory sticks?	☒	☐
10	"Cloud" storage or websites?	☐	☒

11	Other – specify:	☐	☒
12	For all stored data, explain the measures in place to ensure the security of the data collected, data confidentiality, including details of backup procedures, password protection, encryption, anonymisation and pseudonymisation:		
	For all data I collect, I will store a copy on my personal computer, which is password-protected and to which no one has access except the investigator, for easy access on a daily basis. In addition, I will make a backup copy of the data on my personal hard drive to avoid accidental loss of data. For the personal information part of the data, I may use a pseudonym to protect participant information. <i>(this box should expand as you type)</i>		

Data Protection			
		YES	NO
13	Electronic transfer of data in any form?	☒	☐
14	Sharing of data with others at the University outside of the immediate research team?	☐	☒
15	Sharing of data with other organisations?	☐	☒
16	Export of data outside the UK or importing of data from outside the UK?	☒	☐
17	Use of personal addresses, postcodes, faxes, emails or telephone numbers?	☒	☐
18	Publication of data that might allow identification of individuals?	☐	☒
19	Use of data management system?	☐	☒
20	Data archiving?	☒	☐
21	If YES to any question, please provide full details, explaining how this will be conducted in accordance with the GDPR and Data Protection Act (2018) (and any international equivalents, where appropriate):		
	For the file transfer part of the data, I will only transfer the data from my personal phone to my personal computer, something like that between personal devices. In the future, the analyzed data may be exchanged with my own tutors, but the raw data will not be transferred. In addition, the participant's personal information will be protected by me, and I will use anonymity or pseudonyms to obscure the clear identity of the participants. In addition to this, I will organize the data differently depending on the participant, but of course, as described above, it will all be archived in a personal device. <i>(this box should expand as you type)</i>		
22	List all who will have access to the data generated by the research activity:		
	Only investigator <i>(this box should expand as you type)</i>		
23	List who will have control of, and act as custodian(s) for, data generated by the research activity:		
	Only investigator <i>(this box should expand as you type)</i>		
24	Give details of data storage arrangements, including security measures in place to protect the data, where data will be stored, how long for, and in what form. Will data be archived – if so how and if not why not.		
	During the course of the study, I will use audio recording and photography to obtain data with the		

	participant's consent, and the data will be stored on the investigator's personal computer, which is password protected and will not be accessed by anyone other than the investigator. The data will be stored until the investigator has reached a conclusion and will be deleted by the investigator if requested by the participant. The data will be stored electronically to avoid loss, and they will be backed up, of course, on my personal cloud drive, which no one will see except the investigator. <i>(this box should expand as you type)</i>			
25	Please indicate if your data will be stored in the UWTSD Research Data Repository (see https://researchdata.uwtsd.ac.uk/). If so please explain. <i>(Most relevant to academic staff)</i> My data will definitely be kept by me personally, but if UWTSD requires it, the purpose and means of use will need to be explained to me and I will seek the views of the participants, if they do not agree then I will not store it. <i>(this box should expand as you type)</i>			
26	<table border="1"> <tr> <td>Confirm that you have read the UWTSD guidance on data management (see https://www.uwtsd.ac.uk/library/research-data-management/)</td> <td>YES</td> <td>☒</td> </tr> </table>	Confirm that you have read the UWTSD guidance on data management (see https://www.uwtsd.ac.uk/library/research-data-management/)	YES	☒
Confirm that you have read the UWTSD guidance on data management (see https://www.uwtsd.ac.uk/library/research-data-management/)	YES	☒		
27	<table border="1"> <tr> <td>Confirm that you are aware that you need to keep all data until after your research has completed or the end of your funding</td> <td>YES</td> <td>☒</td> </tr> </table>	Confirm that you are aware that you need to keep all data until after your research has completed or the end of your funding	YES	☒
Confirm that you are aware that you need to keep all data until after your research has completed or the end of your funding	YES	☒		

SECTION K: Declaration

The information which I have provided is correct and complete to the best of my knowledge. I have attempted to identify any risks and issues related to the research activity and acknowledge my obligations and the rights of the participants. In submitting this application I hereby confirm that I undertake to ensure that the above named research activity will meet the University's Research Ethics and Integrity Code of Practice which is published on the website: https://www.uwtsd.ac.uk/research/research-ethics/		
1	Signature of applicant:	Date:

For STUDENT Submissions:

2	Director of Studies/Supervisor:	Date:
3	Signature:	

For STAFF Submissions:

4	Academic Director/ Assistant Dean:	Date:
5	Signature:	

Checklist: Please complete the checklist below to ensure that you have completed the form according to the guidelines and attached any required documentation:

☒	I have read the guidance notes supplied before completing the form.
☒	I have completed ALL RELEVANT sections of the form in full.
☒	I confirm that the research activity has received approval in principle
☒	I have attached a copy of final/interim approval from external organisation (where appropriate)
☒	I have attached a full risk assessment (where appropriate) ONLY TICK IF YOU HAVE ATTACHED A FULL RISK ASSESSMENT
☒	I understand that it is my responsibility to ensure that the above named research activity will meet the University's Research Ethics and Integrity Code of Practice.
☒	I understand that before commencing data collection all documents aimed at respondents (including information sheets, consent forms, questionnaires, interview schedules etc.) must be confirmed by the DoS/Supervisor, module tutor or Academic Director.

RESEARCH STUDENTS AND STAFF ONLY

All communications relating to this application during its processing must be in writing and emailed to pgresearch@uwtsd.ac.uk, with the title 'Ethical Approval' followed by your name.
You will be informed of the outcome of your claim by email; therefore it is important that you check your University and personal email accounts regularly.

STUDENTS ON UNDERGRADUATE OR TAUGHT MASTERS PROGRAMMES should submit this form (and receive the outcome) via systems explained to you by the supervisor/module leader.

This form is available electronically from the Academic Office web pages:

<https://www.uwtsd.ac.uk/academic-office/appendices-and-forms/>