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How to innovate in health area?

Abstract

Companies, markets, and consumption patterns are all part of daily life, particularly in health area. It is the responsibility of the pharmaceutical industry and patients to develop pertinent solutions (innovations) that are based on human needs. Design Thinking (DT) is a tool for innovating, and it should put people first. The answer has the power to transform people's lives or address their problems. The purpose of this work is to propose DT concepts for application in health area innovation. Empathy, Collaboration, and Experimentation are the three primary pillars of Design Thinking, a human-centered paradigm of thought. The four steps of this innovative development technique are Discover, Define, Develop, and Commercialize. Discover, Define, Develop, and Deliver are the four distinct steps of this innovative development technique. The DT creative process is collaborative and incorporates consumers from the outset. Users of DT look for products that offer value that can be quickly tested, verified, and deployed on the market or for the user's advantage. To vastly enhance the experiences of healthcare consumers, DT is broadly applicable in the field of health area and to all acts that directly or indirectly involve the prevention and/or treatment of illnesses. Because the major emphasis is on the individual/patient/customer/service, combining this technique with conventional scientific methods might boost health innovation.

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Introduction

Health area has seen improvements in both research and education, which has enabled a wide range of difficult health problems to be solved using these procedures. The development and invention of methods and supplies to hasten the healing of a variety of patients dealing with chronic wounds or enduring severe oncologic resections are essential to the improvement of users' health and quality of life.[1]

Creating more capable, useful, and efficient technologies for health area is a never-ending task. To address the demands of patients and professionals, innovation skills must be continuously developed.[2] When new interventions or technologies are built, however, both stakeholders are not always taken into consideration, which leads to the creation of products that go unutilized and have low user compliance because they do not account for the context, needs, or fallibility of humans.[3] This non-user-centered or impersonal approach is also probably a factor in the considerable time lag between intervention development and implementation.[4]

Design Thinking (DT) provides a solution to these issues. They may provide more innovative solutions that take into account the requirements and suggestions of the users and experts concerned. Users are a part of the DT external process from the start and are actively involved. Practitioners of DT look for products that provide value, add value, and can be quickly tested, verified, or utilized for the user's advantage.[5]

Herbert A. Simon is credited with creating Design Thinking in his 1996 book "The Sciences of the Artificial";[6] it is regarded as a strong way of thinking that is equally effective as scientific and academic approaches.[7] Empathy, Collaboration, and Experimentation serve as its three key cornerstones. This technique has been used extensively in the creation of innovative medical devices and in the field of healthcare.[8-10] The purpose of this study is to explain how design thinking may be used to health advancements.

Methods

DT is a paradigm of human-centered thinking. The first pillar of the approach, empathy, deals with our capacity to comprehend the emotions or responses of the people engaged in the problematic scenario. The second pillar, collaboration, entails teamwork to produce a common outcome. Last but not least, experimentation aims to generate observations and experiences under various conditions.[5] The Double Diamond graphic, created by the Design Council (UK) in 2005, is a straightforward approach to explaining the DT process.[11] The four steps of the diagram are: discover, define, develop, and deliver.

The first stage, "Discover," involves immersing oneself in the circumstance and learning more about the setting of the need. In this stage, several methodologies can be applied, including user interviews and desk research, which covers, among other things, database analysis, market research, and ethnographic research. The following stage ("Define") is the stage where patterns are found and conclusions are drawn from the gathered data. It makes it possible to define the issue and arrange the processes and data (Figure 1).

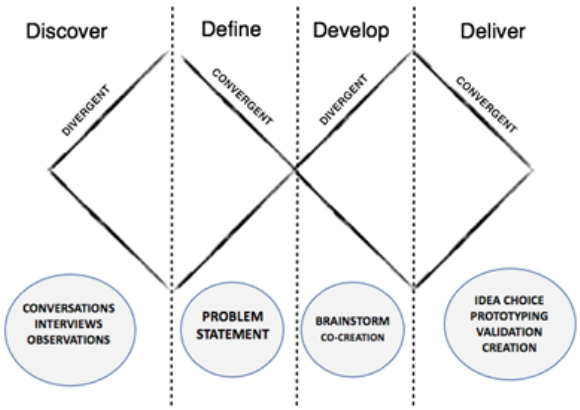

Figure 1 Graphical way of describing design thinking.

The Double Diamond model's third phase, "Develop," strives to generate concepts and perfect prototypes. To further separate the ideas from the issues, involves brainstorming with the team and the intended audience. Deliver, the final phase focuses on the extra modifications and improvements needed to create more developed prototypes in the medium to long term. Testing, adjusting, and verifying the prototype are the major tasks and objectives at this stage (Figure 2).

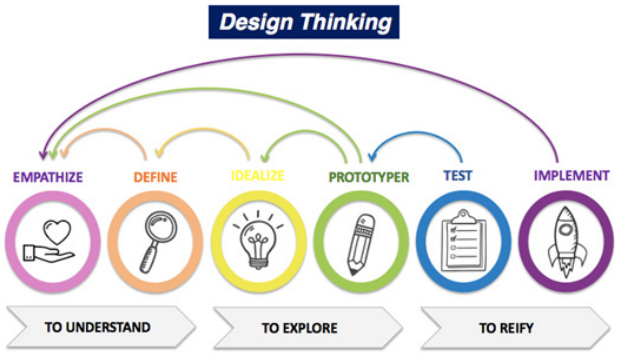

Figure 2 Design thinking step-by-step.

Results

Numerous health advancements resulting from the DT approach are presented in the current literature study. The model may be used in a wide range of situations where the prevention and/or treatment of illnesses are involved, either directly or indirectly. Users of DT look for solutions that provide value, add value, and can be quickly tested, verified, or employed for the user's advantage. The development of an application that looks for trustworthy information regarding the usage of antibiotics used the "Discover" phase. An initial data collection utilizing a questionnaire given to users might lead to innovation in reconstructive surgery. The questions would be used to gauge user satisfaction with the usability of the available information sources.[12] By comprehending the emotions of the people involved, this study will also examine empathy, the first pillar of DT.[12]

By defining criteria based on data from interviews with seasoned reconstructive surgeons, desk research (literature searches and prior art research), and analysis of a scenario of the primary needs of patients who need to be rebuilt, DT could be used to create innovation in reconstructive surgery.[13] Based on information gathered from interviews with seasoned microsurgeons, desk research (library search and prior art search), and analysis of a learning simulation scenario, a microsurgery training model developed from the DT outlined its primary criteria.[13] The gadget should be comprehensive in skill training, and accessibility and portability were crucial, according to one of the results reached. As a result, the device's "Define" step was completed.[13]

Discussion

The production of creative prototypes capable of delivering pertinent answers focusing on human needs has utilized the DT thinking methodology. Since they are built on a humanistic philosophy that incorporates users from the start of their creation, these technologies have the potential to bring about significant social change.[6] According to the literature evaluation, employing the TD approach to offer health treatments yields promising and favorable outcomes. The DT has greater usability and user satisfaction ratings as compared to conventional intervention.[15] Additionally, it is crucial to the creation of the device as well as the implementation of the successful intervention.[4]

The Double Diamond approach acknowledges many ways of thinking by allowing the mapping of divergent and convergent stages of the design process (Figure 1). DT follows a process with predictable inputs and outputs, in contrast to the scientific method, which establishes all procedures before the project starts and moves gradually in a unidirectional manner.[5] It is simpler to pay attention to demands that other methods might ignore while using flexible thinking. As a result, this method can be particularly helpful for developing treatments for marginalized communities, enabling increased community involvement and perhaps lowering health inequalities.[14]

Using the DT's ideas, the Complications and Quality of Life Working Group of the EBMT, 2016 created the "eGVHD App".[10] It was created by a team that included specialists in graft versus host disease (GvHD), information technology, and usability. An algorithm that assists in the diagnosis of GvHD and makes it easier to score the severity of the condition was created after interactive, human-centered team talks. This app's creation is a perfect example of the "Develop" phase since the team and users held brainstorming sessions to generate ideas. Additionally, it conveys teamwork, the second pillar of DT.[10]

The third pillar, experimentation, was used in the implementation of the SMARThealth mobile device because following its production, the prototype was examined and approved by healthcare specialists. Its characteristics were developed to meet the needs of the end-users and the environment in question and were therefore completed with the "Deliver" phase of the Double Diamond model. It was created to assess and manage the risk of cardiovascular illnesses in underserved groups.[14]

There are still several difficulties when using TD for reconstructive surgery. Tension can arise when user preferences vary from what service providers and researchers consider to be advantageous based on study and experience.[16] It is important to strike a balance between developing solutions that are both practical and efficient so that both patients and clinicians can employ them. Conclusions made based on a limited sample of users provide another difficulty; to be certain of their applicability, such results must be tested in larger groups.[15]

Conclusion

Organizational and behavioral changes are required for the systematic approach to innovation in health area or in encouraging social innovation. Because the major focus of DT is on the individual/patient/customer/service, combining DT methodology with conventional scientific methods may increase the quality of research in the health.

Acknowledgments

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Conflicts of interest

Authors declare that there is no conflict of interest.

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