Ready Reference Health Information Resources for the Target Audience: A Framework

Mohd Rafiz Salji [1]*, Mazwani Ayu Mazlan [1], Haslinda Husaini [1], Mohamad Noorman Masrek [1], and Salina Zawawi [2]

[1] Faculty of Information Management, Universiti Teknologi MARA, Malaysia;
Email: mazwani419@uitm.edu.my (M.A.M.), haslinda3145@uitm.edu.my (H.H.), mnoorman@uitm.edu.my (M.N.M.)
[2] Sarawak State Library, Kuching, Sarawak, Malaysia; Email: salinaz@sarawak.gov.my (S.Z.)
*Correspondence: mohdrafiz@uitm.edu.my (M.R.S.)

Abstract—In the library, a variety of resources are provided to the customer in order to access or retrieve health information materials. Based on previous works, there are numerous services available to the customer in general to access these materials. However, there are two problems with obtaining health information. The first is the time required to search for and acquire the right health information materials by the customer or with the support of the library, and normally, the customer searches for health information for their own purposes. The next problem is that some of the information obtained from certain sources is not reliable. Therefore, in order to solve these problems, this paper proposes a framework to provide a new service in the form of ready reference health information resources, either printed or digital, specifically to the target audiences. This paper also proposes engaging with health professionals to confirm the content's credibility before publishing ready reference health information resources. Based on these ideas, it is hoped that the problems of time spent searching for information and the reliability of information obtained from certain sources will be resolved.

Keywords—health, health information, ready reference health information resources, target audience, library

I. INTRODUCTION

The library offers a variety of information resources (such as access to the internet and an online database) to customers in order for them to access and retrieve information materials. One of the topics that the customer is interested in is health. According to the British Medical Journal, there are at least 100,000 health-related websites online (Zionts, Nancy, Jan, Julianna, & Pamela, 2010). That figure has expanded tremendously in the years thereafter, and it is believed that between 75 and 85% of Internet users have gone online for health information (Zionts *et al.*, 2010). Customers are becoming more engaged and active in understanding their health issues and needs, as well as making decisions about treatment alternatives and services. The library must be innovative in delivering more health-related services to customers in order to instill health literacy.

Health literacy is described as the capacity of individuals to access, process, and comprehend fundamental health information and services required to make informed health decisions (Barrett, 2009). According to the Institute of Medicine, over half of all American adults, or around 90 million people, struggle to grasp and use health information (Luo & Park, 2013). These individuals are classified as having poor health literacy, which will affect their health outcomes such as inappropriate use of service, disease awareness, and the capacity to manage chronic conditions such as hypertension and diabetes (Luo & Park, 2013). Accessing and understanding quality health information is crucial to improving health literacy, and public libraries are well-positioned to help in this area (Luo & Park, 2013). The library offers a free and simple means for the customer to navigate health information resources, meet their health information requirements, and ultimately improve their health literacy (Luo & Park, 2013).

Customers have encountered certain difficulties in obtaining health information from resources. The first problem is that the customer needs time to search for health information using information resources such as the internet (Barr-Walker, 2016; Danhoundo, Doug, Daniel, & Jill, 2019; Meng, Li, Rui, & Zhang, 2021; Yoon & Soojung, 2014), reputable websites (Gillaspy, 2005), and databases (Whitney, Alla, & Betsy, 2017). The customer may also seek assistance from the librarian, who must spend time searching for the needed information in resources such as at the health center (Barrett, 2009). During the program and activity, the customer also receives health information materials, however, this event is only held at a specific time and location. The second problem is that some health information materials are received through information resources, such as the internet, where some of the sources cannot be trusted (Meng, *et al.*, 2021). Therefore, a service in the library that can address these challenges is required to encourage health literacy.

The main aim of this paper is to propose a new service provided by a library to customers, particularly the target audience, in the form of ready and trustworthy health information materials. This service enables the target audience to get health information quickly and the

information is reliable. To achieve the main objective, the specific objectives are as follows:

    a. To analyze the services offered by libraries in the prior literature connected to the dissemination and promotion of health information.

    b. To provide a framework for identifying target audiences and comprehending the issues involved in order to place content in ready reference health information resources.

    c. To formulate a plan for creating and disseminating this new service.

II. MOTIVATION

Tourism Malaysia Sarawak has a tourism information center at the Kuching International Airport, located near the arrival gate. This facility supplied ready tourism information materials in the form of printed for example pamphlets, brochures, and booklets. The ready tourism information materials include information on news, current events, and fascinating sites in Sarawak. These resources are available to visitors for free. The center's personnel are tasked with providing visitors with information. In terms of the center's location, this is a good spot since they are prepared to guide and give ready materials to visitors.

Based on this notion, this paper aims to propose a new service at the library that will provide fast access to health information in the form of printed and digital materials. The ready health information supplied is relevant to the target audience. However, in order to give health information to them, the target audiences and issues must be recognized. This initiative will instill health literacy among its customers, particularly target audiences.

III. RELATED WORKS

For decades, librarians have used a range of methods and materials to introduce customers to topics and encourage them to use library resources. Health information is one of the topics that libraries provide to their customers. The library has provided a number of resources for obtaining health information. This section emphasized and gathered health information resources and materials applied by previous works.

A. Internet

The internet is an indisputably important and powerful source of health information for the public. According to a Harris Poll, 110 million individuals search for health information online on a regular basis (Barr-Walker, 2016). Previous work reported international graduate students are more inclined to seek the internet for health information, hence, web-based education materials or guidelines would be an effective format to give health information to them (Yoon, & Soojung, 2014). Senior citizens also use the internet to discover health information, as well as help and guidance (Barr-Walker, 2016). Previous work found that the top three choices for customers of Alberta's rural public libraries in terms of acquiring health information were aided public internet

access/searching, reference to local health organizations, and unassisted public internet access/surfing (Danhoundo *et al.*, 2019). Based on the previous works, the internet is commonly used to access health information, however, customers might spend several hours filtering through the information overload (Barr-Walker, 2016), and half of the customers distrust the information obtained from the internet (Meng *et al.*, 2021).

B. Quality Websites and Databases

Instead of directly searching for health information through the search engine, another source to obtain health information materials is quality websites and databases. Quality websites and databases are referred to the sources that can be trusted and the materials are reliable. National Institute of Digestive, Diabetes, and Kidney Diseases (NIDDK) is one of the quality websites with easy-to-read health content in their collections (Gillaspy, 2005). Healthfinder (http://www.healthfinder.gov/) is likewise a very user-friendly website. It has the benefit of being "simple to read" and linking to material that is not specialized to a certain sickness or bodily system (Gillaspy, 2005). There are some websites available to search for health information, for example, NIH Senior Health, Familydoctor.org, Drug Digest, Drugs.com, DIRLINE (Director of Information Resources Online), Lab Tests Online, Aetna Intelihealth, Family History, Household Products Database, National Cancer Institute, American Heart Association, Tox Town, Genetics Home Reference, and Dictionary English Spanish from the Oregon Occupational Safety and Health Division (Zionts *et al.*, 2010). Customers might also use databases to search for relevant health information materials such as the National Library of Medicine's biological database, and MEDLINE (generally identified by the free interface name PubMed). Librarians at the University of Texas Health Science Center in San Antonio taught students how to utilize MedlinePlus and MedlinePlus en Español (Whitney, Alla, & Betsy 2017). Academic librarians in Massachusetts worked with a local public library to provide monthly classes that taught the public how to find reliable health information on MedlinePlus (Malachowski, 2011). However, the right health information still needs to be searched, and occasionally assistance from a librarian or a health professional is required.

C. Program and Activities

Normally, the library invites groups or health professionals to participate in the event. Previous work emphasized the partnership of health sciences librarians and health professionals to create a culinary medicine curriculum to teach the community how to obtain health information using MedlinePlus and ChooseMyPlate (Lemley, & Rachel, 2020). Pamphlets and flyers regarding MedlinePlus and other related health resources were distributed to the community (Lemley, & Rachel, 2020). Previous work highlighted the library collaborated with the Philadelphia Department of Public Health Immunization Program, which manned a booth regarding paediatric and adult immunizations and answered customer concerns (Danhoundo *et al.*, 2019). The library

also collaborates with Children's Hospital of Philadelphia (CHOP) and other community partners to give storytime (reading sessions for young children and families) with a healthy lesson, covering subjects such as dental health, fruits, and summer health (Daingerfield-Fries, Torrence, Pokorny, Ross, & McClintock, 2018). Rural libraries work with local public schools to support communities by arranging teen outreach programs, reaching out to senior communities, and leading health promotion initiatives (Flaherty & David, 2016; Smallwood, 2010). South Philadelphia Library teaches and improves health literacy for its many visitors and users by offering a variety of health-related activities and events, such as storytime, computer access, Wii games for youngsters, and printing and computer workshops for health center patients (Daingerfield-Fries *et al*., 2018). Rather than offering health information to library customers, the previous work demonstrated that public libraries used the expertise of the National Library of Medicine to teach librarians, resulting in increased librarian confidence and competency in finding health information from a variety of sources (Noh, 2013; Radick, 2015; Sandstrom, 2004). Librarians in the academic library also conduct "train the trainer" classes to educate librarians in the public library on mental health resources in order to raise awareness of the importance of teaching mental health literacy to library customers (Radick, 2015). This event allows for the rapid acquisition of ready health information and information from health professionals. Some of the events also focus on the target audience. However, health information is collected only during the event that takes place at a certain time and location.

D. Health Center / Corner / Section

Barr-Walker (Barrett, 2009) emphasized the public library in Virginia owned the health center, which allows customers to ask librarians for assistance in searching and interpreting health information and supplying health materials. Similarly, public libraries in Botswana have built health corners that provide referral services to health organizations/agencies in order to optimize access and ensure customer satisfaction (Ntlotlang & Balulwami, 2016). Several public libraries in Netherland established health information points or sections, resulting in 63.3% of customers visiting the library to seek health information (Ntlotlang & Balulwami, 2016). In this situation, librarians provided a variety of health information in the form of printed and online resources in response to a customer request for personal use. However, the librarian would still search for and take time to discover the desired material.

Based on previous works, the library provided health information to the customer in a variety of resources and materials. However, the customer needs time to find the correct health information, and the librarian requires time to find the material requested by the customer. To get access to this information, both the librarian and the customer must guarantee that it originates from trustworthy sources. This paper aims to provide the target audience with readily available health information in the form of printed and digital materials. This would expedite

the process of distributing health information while also instilling health literacy in the target audience. This paper also intends to deliver health information without hesitation.

IV. TARGET AUDIENCE AND ISSUES RELATED

The library offers a wide range of resources, and materials to help customers feel at ease. Health information is one of the sources provided by the library to the customer based on the preceding section. They can search for information on their own or ask the librarian for assistance in finding the required information. Normally, the customer is classified according to their status, for example, children, adults, and senior citizens. Instead of focusing on searching for health information for the customer in general, the library might focus on providing a service to the customer depending on the status or target audience. Based on the previous work, the library has held certain events aimed at the target audience, such as cooperation with Children's Hospital of Philadelphia (CHOP) and other community partners to provide health information to children and families (Daingerfield-Fries *et al*., 2018), but the event is limited in time and location.

The rationale for focusing on the target audience in this paper is that the library can deliver ready health information to them, and the information can be obtained faster, while also instilling health literacy. Fig. 1 illustrates the architecture of the proposed ready reference health information resources for the target audience. Based on Fig. 1, to develop ready health information for the target audience, the library must first determine who those audiences are. This is because the library will disseminate printed materials and printing a huge number of items is wasteful if the content is irrelevant to the target audience.
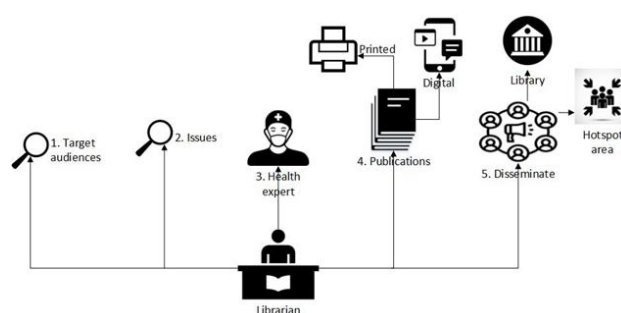

Figure 1. Architecture of the proposed ready reference health information resources.

Next, the library needs to investigate what issues are relevant to these audiences, such as disease, food, sport, and ergonomic environment. Understanding these issues allows the library to offer quality ready reference health information resources while also attracting the target audience to read. Based on the previous works, some information about the target audiences is provided below, and issues concerning them are emphasized. This will serve as a framework for the library in determining its target audiences and the issues that affect them.

A. Older Adults

One of the most prevalent target audiences at the library is older adults. Based on previous studies, libraries offer a variety of activities to improve health literacy among this population, such as classes on the NIHSeniorHealth Toolkit for Trainers (Susic, 2009), training in the use of the MedlinePlus and NIHSeniorHealth databases (Barrett, 2009), and the creation of a corresponding LibGuide (Barrett, 2009), and a consumer health awareness training program called SeniorCHAT (Barrett, 2009).

The first issue that this target population has is alcohol. When compared to other age groups, older people aged 65 and over had the greatest rates of drinking on five or more days per week, with 24% of males and 13% of women partaking (Alessi & Elaine, 2016). According to the data, while older individuals drink fewer units in a single session, they drink more often than the other groups over the course of a week (Alessi & Elaine, 2016).

The issue was then related to bone. Inadequate calcium and vitamin D intake are linked to bone density reduction in old age, which can lead to painful, expensive, and weakening bone fractures, particularly in older women (Alessi & Elaine, 2016).

Finally, the issue highlighted is sport. Previous work suggested as well as 150 minutes of exercise weekly, older adults should also undertake physical activity to improve muscle strength at least two days a week (Alessi & Elaine, 2016). Physical activity helps maintain a healthy weight, improves cholesterol levels, reduces blood pressure, builds healthy muscles and bones, improves balance, and reduces the risk of falls (Alessi & Elaine, 2016).

B. Youth and Male Users

According to the findings of the previous study, the majority of customers who visit the public library for health information are youth and male users (Ntlotlang & Balulwami, 2016).

The first concern raised by previous work for these audiences is mental health problems (i.e., depression, anxiety, and stress) (Zochil & Einar, 2018). Rickwood *et al.* (2005) studied 2, 721 young people in Australia between the ages of 14 and 24, finding that males were more likely to report having a mental health problem and less likely to have help-seeking intentions than females of the same age.

Bullying is the next issue that is closed to the youth, and it is related to the previous issue. The health and behavioral repercussions of bullying victimization differed. Females were more likely than males to have most mental health problems, drug use, and other risky behaviors as a result of bullying (Putra & Tashi, 2022). Female adolescents have greater rates of health and risk behaviors than males (Putra & Tashi, 2022). Bullying increased the chance of loneliness by nearly 2.9 times in both males and females (Putra & Tashi, 2022). Female and male adolescents who were bullied were also 2.99 and 2.65 times more likely to be nervous, respectively (Putra & Tashi, 2022).

The next issue that is related to these audiences is smoking. Around ten million persons still smoke in the UK, with males aged 50-59 having the greatest consumption, smoking approximately 15 cigarettes per day (Alessi & Elaine, 2016).

Finally, there's the problem of obesity. Farmville and Pitt County are dealing with a major problem and, indeed, 72.7% of adults are fat or overweight (Flaherty & David, 2016).

C. Student

The student is the most typical target audience for academic or school libraries. There are several issues with this audience.

First, a sleep disorder is a common issue among university students. According to previous studies, 70% of the population suffers from this condition (Cortijo-Palacios, Guillermina, Oliva, & Alba, 2022). During the covid-19, there was a significant incidence of dysfunctional behaviors of sleep problems. 35% of those polled acknowledged that their exercise time had dropped, which also affected their sleep quality (Cortijo-Palacios *et al*., 2022). Similarly, it has been noticed among younger university students in the health field, the prevalence of higher insomnia and hypersomnia, which was associated with anxiety situations (Cortijo-Palacios *et al*., 2022).

Another concern affecting this population is eating habits. There is evidence that female students are more prone than males to be obese, have eating disorders, and be less responsive to physical activity programs (Shaw, Paul, Anna, & Anna, 2015). Males were found to be more physically active than females their age (Shaw *et al*., 2015).

This group is also affected by mental health issues. Poor mental health is widespread among students who have relationship stressors, a lack of social support, or have been victims of sexual abuse (Hunt & Daniel, 2010). Male undergraduates are more likely to commit suicide, although female students are more likely to be diagnosed with serious depression and anxiety disorders (Hunt & Daniel, 2010). Students from low-income families are more likely to have depression and anxiety symptoms (Hunt & Daniel, 2010).

Alcoholism is also a concern in this community. 80% of college students drink, and half of those who drink do so on a regular basis (Ehrlich, Arshaud, Sam & James, 2006). 1,400 college students have been estimated to die each year as a result of alcohol-related accidental injuries, such as car accidents (Ehrlich *et al.*, 2006). 500,000 students have been estimated to be harmed each year, with over 600,000 alcohol-related attacks (Ehrlich *et al.*, 2006). The serious impacts of alcohol consumption (for example, low academic performance, injury, and death) have an influence on the lives of students (Ehrlich *et al.*, 2006).

Bullying has been linked to worse academic attainment in adolescents. Despite the minor size of the connection, Nakamoto and Schwartz (2010) found that peer victimization negatively affected academic success and that the association did not differ by gender. School, being a location where bullying occurs often and provides

continual opportunity for perpetrators or bullies and victims to interact, plainly leads to lower school satisfaction, as well as feelings of unhappiness and safety among victimized children (Putra & Tashi, 2022). This condition fuels the impulse to be truant, drop out of school, and negatively affects academic achievement (Putra & Tashi, 2022).

D. Academic Staff

Academic staff is the most common visitor to the academic library. This population prefers the library as a location to look for information by using the numerous types of resources supplied by the library to complete their daily tasks.

The first issue that this audience has in common is stress. Stressed educators may have unexpected, severe, or drastic negative attitudes and behaviors and become intolerant of students, thus, compromising the quality of education offered to students (Tai, Yee, & Poh, 2019). Previous work surveyed that the prevalence of stress among local educators was 23.1%, which was greater than the prevalence among non-educators (19.8%) Mukosolu, Faisal, Lekhraj, & Normala, 2015). Male had a higher prevalence of stress compared to that female whereas lower education level was associated with lower stress (Tai, Yee, & Poh, 2019). Higher levels of occupational stress or emotional exhaustion have also been linked to an increased prevalence of Musculoskeletal Diseases (MSD) in women (Ehsani, Mohammad, César, & Javanshir, 2018; Yue, Fengying, & Liping, 2012).

The following issue is MSD which refers to injuries or diseases of the muscles, nerves, tendons, joints, cartilage, and spinal discs. Previous work found that females had a higher prevalence of this issue than males. The incidence of musculoskeletal problems was related to a longer duration of teaching (length of working) (Karwan, Azuhairi, & Hayati, 2015). The incident also exposes ergonomic risk factors such as extended standing, prolonged sitting, computer work, going up and down stairs, and dealing with weights (Mohan, Maria, Madhanagopal, Syafiqah, & Siti, 2015; Nurul, Abdullah, Moin, Bahri, & Hashim, 2010). Regular exercise, on the other hand, has been found to lessen the severity of chronic pain and therefore reduce the development of MSDs (Ehsani *et al*., 2018; Erick & Derek, 2014).

The last issue is abnormal lipid profiles. It refers to high amounts of low-density lipoprotein (LDL) cholesterol and fats called triglycerides, or both. High quantities of these substances raise the chances of getting heart disease. Men were more likely than women to have abnormal lipid profiles (Ariaratnam, Ambigga, Aqil, Mohd, Salmi, Siti, & Ng, 2017).

Based on the concerns raised in relation to the target audiences, certain guidelines are designed in this paper to arrange the contents in the ready health information material. The library can generate ready reference health information resources that explain one, or two, or combine all issues. For example, for the older adult, the ready health information material can be filled with merely the issue of alcohol, or it can be combined with other concerns, such as bone and sport since both are connected, or it can be filled with all issues because they are relevant to the target audience. It is similar to the other target audiences, such as young and male users. The library may explain merely the issue of smoking, or they can discuss the issues of mental health problems and bullying because they are connected or describe all issues in one ready health information material.

This might be a notion for the library to develop ready reference health information resources for the target audience. This section just mentioned a few, however, the target audiences of various libraries vary. Therefore, libraries have to specify their target audiences and research the issue related to a specific type of target audience. Next, the plan to set up this new service is discussed in the next section.

V. PLAN TO CREATE AND DISSEMINATE READY REFERENCE HEALTH INFORMATION RESOURCES

The library must be chosen as a starting point for this new service. To begin, the Universiti Teknologi MARA (UiTM) library has been chosen to begin this initiative. To ensure the success of this project, the researcher must work with the library and health professionals. The library's function is to act as a center to provide this service to the target audience, while the health professional's function is to validate the content of the ready reference health information resources. Although this new service is intended to begin at the academic library, it may also be offered at any other type of library.

In general, the academic library's target audience is students and staff. According to the preceding section, there are several issues raised with respect to these audiences. With these issues, the creation of ready reference health information resources may begin. Before it is published, it will require the assistance of health professionals to validate the facts. The library at UiTM can collaborate with the Health Unit, UiTM to review the content of ready reference health information resources and solicit feedback from them. Finally, the ready reference health information resources can be published in both printed and digital formats.

In addition to the ready reference health information resources, printed materials can be issued in the form of, for example, pamphlets, brochures, or booklets. These resources can be provided not just at the library but also at campus hotspots such as the food court and elevator to inculcate health literacy. It is necessary to supply the appropriate equipment to hold these materials. In terms of digital materials, this content can be accessible, for example, on the library's website or on the library's social media channels.

VI. CONCLUSION

Instead of offering a service to deliver health information to customers, this paper presents a new service of supplying ready reference health information resources with content geared toward the target audience. Previous work often searches for information for the

customer's own purposes, however, this study suggests a new service that focuses on providing information to the target audience. By delivering ready reference health information resources, this notion can minimize time spent searching for health information. Because some resources cannot be trusted, therefore, these materials need to be validated by the health professional before being published. This paper analyses the services offered by libraries in previous works to determine what are the present services supplied by libraries. Following that, this study proposes a framework for defining the target audience and issues related to generating the materials' content. Finally, a strategy for creating and disseminating resources was proposed.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

AUTHOR CONTRIBUTIONS

Mohd Rafiz Salji wrote the entire article; Mohamad Noorman Masrek is involved in commenting and reviewing; all authors had approved the final version.

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