SUPPORTING THE FIGHT AGAINST CANCER IN MOROCCO: DATABASE IMPLEMENTATION AND DATA MANAGEMENT FOR ASSOCIATION JANNAT

Figure 1: Our final presentation with the employees and patients of Association Jannat.

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An Interactive Qualifying Project

submitted to the Faculty of

WORCESTER POLYTECHNIC INSTITUTE

in partial fulfilment of the requirements for the

degree of Bachelor of Science.

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Date:

March 2, 2019

Submitted to:

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Abstract:

Every year, millions of people are affected by cancer. Association Jannat is an organization that supports the fight against cancer by providing free housing, meals, transportation and social support to female cancer patients receiving treatment in Rabat, Morocco. In collaboration with Mr. Abdellah Sassioui and Ms. Ibtisam Ouayashn, we created a database to streamline data management. This database decreases the amount of time and energy staff dedicate towards administrative duties, allowing them to focus on caring for patients. This database also allows the association to present summary statistics about their operations to potential donors and the media. We also developed a list of recommendations for the association to enhance data management and expand their services.

Acknowledgements

Executive Summary

Introduction

Cancer is a leading cause of death in the world today (WHO, 2018). This disease transcends cultural, geographic, and socioeconomic barriers. However, its effects and prevalence are greater in developing countries. One study showed that the female cancer mortality rate in middle income countries, such as Morocco, is almost double that of the world average rate (Khalis et al., 2016).

This statistic is due to a lack of accessible and affordable healthcare for Moroccan cancer patients. Specifically, those living in rural communities often have to travel long distances to the closest city in order to receive treatment. The most basic chemotherapy treatments are too expensive for many, costing approximately 1.15 times the annual minimum income of a Moroccan citizen. Additionally, social apathy towards deadly diseases is often found in developing countries and contributes to a lack of awareness of preventive practices. This apathy results in social stigmatization which further isolates the patients and worsens their conditions (Nejmi, Wang, Mendoza, Gning, Cleeland, 2010). Female Moroccan cancer patients face additional challenges throughout their treatment process as they often lack support from their husbands. One sociologist explained that a husband's desire to stay with his wife is often deeply intertwined with her beauty and ability to procreate, which are often taken from her with her diagnosis (Mazellier, 2018). These obstacles, in addition to a rising female cancer incidence rate, make Moroccan organizations that seek to assist female cancer patients increasingly important.

Association Jannat, founded in 2009 by Khadija El Qorti, is one such organization. After losing her sister and husband to cancer, she opened her home to female cancer patients in need of a place to stay while receiving treatment in Rabat. Association Jannat provides women with free housing, meals, transportation to and from treatment centers, medication, and social support. After speaking with patients, it was evident that the women highly value the social support they receive. One woman said, "I am more comfortable here than with my family" (Association Jannat, personal communication, February 1, 2019). Providing this level of hospitality requires an abundance of time and energy from the staff. For this project, we sought to increase the amount of time employees were able to spend with the patients through focusing on a specific challenge that the association faced.

Figure 2: President and Founder of Association Jannat, Khadija El Qorti

Problem Statement

The association requested that we enhance their data management through the creation and implementation of a database. They currently rely on paper files to store patient, donation and employee information, which makes data management time consuming. This system also makes it nearly impossible to run statistics and analyze data since this information must be calculated by hand. With this knowledge, we developed the research question: "How can we enhance the data management of Association Jannat?"

Project Goal

We proposed and accomplished two objectives to improve the organization's data management and create a list of recommendations to potentially enhance their services:

1. Designed an easy to use database that contains beneficiary[1] and employee information, a registry of donations and funds, and a medication inventory.

2. Gained perspectives through researching and visiting the Lalla Salma Foundation and through conducting interviews with patients of the association.

Mr. Abdellah Sassioui, the secretary general of the association, suggested creating a database to improve the association's data management. A database would allow the association to input, organize, and retrieve data quickly as well as generate useful, easy to read visual statistical data. Through this improved functionality, we aimed to decrease the amount of time employees spent accessing, managing, and analyzing data, and increase the amount of time they could spend with patients. We also hoped to increase the association's ability to accurately publicize information to donors and media sources.

Finally, we provided a list of recommendations to further enhance their data management and expand their services. To do this, we sought out additional perspectives. First, we researched and visited the Lalla Salma Foundation, an organization in Morocco with a similar mission to Association Jannat's, to compare their data management systems and services. Then, we conducted interviews with patients to see how they believed the association could be improved.

Methods

We decided to use Microsoft Access after database research and consideration of the limitations of the current paper system. For our first objective, we created a prototype consisting of fields currently used by Association Jannat that demonstrated the basic abilities of the software. We interviewed Mr. Sassioui and Ms. Ibtisam Ouayashn, the social assistant, to gather information on what data was accessed most frequently; we then visited regularly to receive their feedback on the database and make any necessary modifications. To evaluate our progress, we asked the database users to rank task difficulty and user satisfaction in comparison to the paper filing system. With this ranking, we determined whether the database improved their data management system and satisfied their needs.

We also created a user manual and video tutorials to show employees how to use Microsoft Access, specifically how to input data, generate queries and reports, and create graphics using statistics. The manual and videos were both made in French.

For our second objective, we conducted research on the Lalla Salma Foundation and visited one of their "Maisons de Vie", or Houses of Life, in Casablanca. This visit helped us understand how they manage their data and provide services to patients. We also conducted conversations with the patients at Association Jannat to assess how they thought services could be enhanced.

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[1] Beneficiaries include both patients and companions.

Results

Objective One

   To fulfill our first objective, we learned about the necessary fields and features for the database. From our initial interviews, we learned that the association was most concerned with storing beneficiary, employee, and donation information. Therefore, we created forms for inputting new patient information, arrivals, medications, and donations. These forms are similar in format and content to the forms that Association Jannat currently uses to record information. Thus, the database is familiar to the users. Forms can be printed and stored in their patient archive to further ease the transition from paper to electronic documentation.

   In order to ensure that the database satisfied their needs, we conducted interviews with the primary users of the database, Mr. Sassioui and Ms. Ouayashn, about their typical data management tasks and how they hoped to use the database to accomplish them.

   Mr. Sassioui was most interested in using the database for creating reports and statistics. He requested that the database gave him easy access to meaningful and easy to read information about the association, which would be used for advertising Association Jannat's mission to donors and public media sources. Mr. Sassioui also expressed interest in tracking medication inventory and distribution. He stated that sometimes medication expires or runs out unexpectedly and it is difficult to estimate the medication needs of the association. To satisfy this request, we added a table to monitor the inventory of medication in Association Jannat's pharmacy.

   Ms. Ouayashn is the social assistant who meets frequently with patients to check on their physical and mental health. In an interview, she stated that she has difficulty meeting with all of the women she needs to in one day, so she focuses on patients who require special attention. This is often the poorer women because they do not have access to the same treatment options as those with more financial resources. This characteristic is typically determined by looking at the type of insurance a patient has. Therefore, we included a field that listed this information, which can easily be sorted using a query.

Figure 3: Screenshot of Patient Intake form in database.

   We created video tutorials and a written manual describing how to use the database. Both the videos and the manual were created to teach current and future employees of Association Jannat on how to utilize the database.

Objective Two

   Our team visited the Lalla Salma Foundation to gain an additional perspective on how a similar not-for-profit, Non-Governmental Organization (NGO) in Morocco manages their data and provides services to beneficiaries. From this visit, we gleaned some helpful suggestions for Association Jannat's digital data management. Findings from our meeting with the Lalla Salma Foundation have also inspired recommendations to enhance Association Jannat's data management.

We also gained the perspective of patients staying at Association Jannat in order to understand areas they thought could be improved within the association. While all patients praised Association Jannat, some women had suggestions for improvement of its services. One woman explained that she was initially reluctant to stay at the association because she was not accustomed to living in close quarters with other women. She desired more privacy than what the association typically offers beneficiaries. Another woman added that since she is very poor, she wished Association Jannat could provide more funding for medical services, such as MRI's. With these suggestions, our visit to the Lalla Salma Foundation, and the data management needs in mind, we developed a list of recommendations to enhance Association Jannat's data management and expand their services.

Recommendations

The goal of our recommendations is to have a lasting positive impact on the association's employees and beneficiaries by providing database support, improving data management, and expanding Association Jannat's services.

First, we recommend that Association Jannat continues to learn how to use Microsoft Access by using outside sources in addition to the tutorials we created. Gaining further knowledge from different sources would be beneficial for the database users. These sources could provide different methods for managing data or explain advanced features we did not address. We have created a playlist of suggested tutorials but encourage Association Jannat to further explore these videos on their own.[2] These tutorials would also provide support if an error occurs within the database.

We suggest that the association contacts Mr. Mohammed Salhi or Dean Essaaidi of École Nationale Supérieure d'Informatique et d'Analyse des Systèmes (ENSIAS) to initiate communication with university students familiar with Microsoft Access and SQL. These students can provide on-site help to Association Jannat should they experience future problems with the database.

Microsoft Access supports Arabic text in tables, forms, queries and reports, but while testing the database, we discovered that it does not support Arabic text in graphs. We suggest that the users export data into Microsoft Excel to perform statistical analyses because it is compatible with Arabic text and has greater functionality than Microsoft Access alone.

We recommend adding at least 100 to 200 existing beneficiaries from the last year to the system in addition to future beneficiaries. The more beneficiaries that are added to the database, the more accurate the statistics generated will be. Accurate statistics can increase public interest in the association, which may stimulate philanthropic efforts. We recommend that Association Jannat generate statistics on their beneficiaries in order to identify demographic trends, which could help the executive board make decisions that result in better care for current and future beneficiaries. Producing statistics that highlight the demographics of the beneficiaries may also increase public interest in Association Jannat. These statistics can also be used when applying for grants.

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[2] Here is a link to the video tutorials on YouTube.
https://www.youtube.com/playlist?list=PLekxat4UXc0Qvzg3npYLJIOYnzoltxDgH

We recommend the association's secretary, Ms. Saida El Qorti, be trained on how to use the database. We saw this as an area where the process can be made more efficient by decreasing the amount of time spent transferring information between employees. We recommend that Ms. El Qorti inputs beneficiary information into the database and the paper files concurrently. We also recommend that the treasurer of the association, Mr. Sahl El Qorti is taught how to input and continuously update donation information by using the donation form and table. Training these employees would promote usage of the database, making it more prevalent and useful for further data management, such as the creation of statistics.

After examining the database at the Lalla Salma Foundation's House of Life in Casablanca, we determined that it would be useful for the association to record patient visits to the hospital, the treatments that they receive, and the contact information of their doctors. Recording this information would allow the association to contact the doctors quickly in case of an emergency. Furthermore, increased communication between the doctors and Association Jannat would contribute to a better understanding of the patients' needs, thus increasing the quality of care.

We also suggest creating more privacy within the patient room in the association's main building. After interviewing the association's patients, we found that one patient preferred to live in a more secluded space, opting to reside in the second, less occupied home. For the future, we recommend that the association hangs curtains between beds to increase privacy among women.

We recommend increasing the patient's medical care and access to important medications. During beneficiary interviews, one of the women expressed how she struggles to pay for her cancer treatment. She suggested that the association try to raise more funds to help pay for treatments because they are very expensive. We propose that the association follows her advice by allocating a portion of their funds towards medical services.

We recommend that Association Jannat partner with outside organizations to provide their beneficiaries with more free activities. Our results indicate that the women at the Lalla Salma Foundation and Association Jannat have benefitted from such activities. When collaborating with NGOs, organizations and companies can expand their consumer base and improve their public image. These collaborations are favorable to both parties, can strengthen public relations, and can lead to increased donations.

Authorship:

Significant authorship of each section is listed.

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Chapter 4: Results and Analysis 4.1 4.2	 Claire, Anna, Liz Nathan	Claire, Anna
Chapter 5: Recommendations 5.1 5.2 5.3 5.4	 Claire, Nathan Claire, Anna, Liz Liz, Nathan Anna	Claire, Anna
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Video Tutorials	Claire	Claire (edited and translated), Nathan (translated)

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Chapter 1: Introduction

"Throughout the world, the fight against this disease, which has long been perceived as a fatality, has turned into a huge building site for life."

"Dans le monde entier, la lutte contre cette maladie trop longtemps perçue comme une fatalité, s'est transformée en un immense chantier de la vie."

-Her Royal Highness Princess Lalla Salma of Morocco

(Lalla Salma Foundation, 2017).

The World Health Organization reported over 18 million new cancer cases and over 9.6 million cancer-related deaths from January to September of 2018 (WHO, 2018). Cancer transcends cultural, geographic, and socioeconomic barriers. Due to limited access to resources, education, and medical tools, the impact is larger in developing countries such as Morocco. There are fewer resources in rural regions of Morocco especially, which results in increased mortality rates. In 2012, the breast cancer mortality rate for Moroccan women was 18.0 per 100,000 which is higher than the world average of 12.9 per 100,000. Additionally, female cancer incidence rates in Morocco continue to rise, making organizations that assist these women increasingly more important. (Khalis et al., 2016)

Recently, Non-Governmental Organizations (NGOs) such as the Lalla Salma Foundation have been working to support the fight against cancer in Morocco. The organization, founded by Princess Lalla Salma of Morocco, seeks to improve cancer prevention services and treatment within the country (Lalla Salma Foundation, 2017). Additionally, an organization called Association Jannat is dedicated to improving treatment accessibility for financially limited female Moroccan cancer patients who live far from treatment centers. The organization is located in Rabat and provides women with free housing, meals, transportation to and from treatment centers, medication and mental, emotional, physical and spiritual support. Association Jannat currently manages their patient records, employee schedules, and donation information through paper records and often rely on word of mouth to access information. This method of data management makes administrative tasks such as data retrieval, funds management, employee scheduling, creating statistics, and analyzing

Figure 4: Association Jannat patients participating in a picnic excursion.

and publicizing demographic trends difficult for employees. Creating a more efficient system of data management would reduce the amount of time required for administrative duties, giving

them more time to spend with patients. This system would also allow them to increase their public visibility and outreach.

Our research question for this project is: How can we enhance the data management of Association Jannat? In order to address this question, we proposed and accomplished these two objectives.

1) Designed an easy to use, efficient database that contains patient information, a registry of donations and funds, an employee directory, and a medication inventory.

2) Gained perspectives from the Lalla Salma Foundation and the patients at Association Jannat to provide recommendations on how to enhance data management and expand beneficiary[3] services.

The secretary general, Mr. Abdellah Sassioui of Association Jannat had expressed interest in the creation of a database. The database aimed to enhance the management of patient records, donation information, employee schedules, and medication inventory. Through this enhanced data management, information was more quickly and easily accessed and used by employees. In order to understand the potential impact of the database, we talked with the employees who used it. This showed us the amount of time that employees gained and that could then be spent with patients or work towards increasing publicity and outreach. Lastly, we discovered that the association was interested in gaining further feedback on how to improve their organization's services. From the knowledge we gained through patient interviews and our visit to the Lalla Salma Foundation, we developed a list of recommendations for database support, data management, and expansion of services.

We recommended Association Jannat contacts nearby university students to provide on-site help in case the database was to malfunction. This would also be useful if the association decides to enhance their database. We also suggest that the association partners with other organizations such as the Lalla Salma Foundation. In addition to the support they may gain from this, they might benefit from additional activities and services. We believe the database we created and the recommendations we provide will have a lasting impact on Association Jannat as they continue to grow.

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[3] Beneficiaries includes both patients and companions.

Chapter 2: Background

This chapter builds the foundation for understanding the importance of Association Jannat to female Moroccan cancer patients and how to shift an organization's data management system from paper to digital records. First, we discuss how cancer has affected people both globally and in Morocco. We then summarize the Moroccan healthcare system and the challenges that exist for citizens seeking cancer treatment. Next, we explain how Association Jannat and a similar NGO, the Lalla Salma Foundation, support and provide services to Moroccan cancer patients. Subsequently, we discuss the challenges that Association Jannat faces. The challenge we focused on was the inefficiency and lack of capabilities of their previous data management system. The requested solution to this challenge was the creation of a database. We discuss the process behind choosing a database software and the steps needed to transition an organization's data management system.

2.1 Cancer Worldwide

Today, cancer is a leading cause of death in the world (WHO, 2018). From January to September 2018, there were over 18 million new cancer cases and over 9.6 million cancer-related deaths recorded worldwide (WHO, 2018). Multiple studies reported that breast cancer is the most prevalent and the leading cause of cancer-related deaths among women worldwide (Errahhali et al., 2017, Khalis et al., 2016). The highest incidence rates of breast cancer are found in women aged 45-59 years old. The second most common type of cancer found in women is cervical, followed by thyroid. Cancer is more common and its effects are more severe in developing countries, due to a lack of available resources. Developing countries account for approximately 55.6% of all breast cancer cases and 62.1% of breast cancer-related deaths. Morocco is representative of these statistics. In 2012, the breast cancer mortality rate for Moroccan women was 18.0 per 100,000, which was significantly higher than the world average of 12.9 per 100,000. (Khalis et al., 2016)

2.2 Problems that Moroccan Cancer Patients Face:

Recently, cancer researchers have gained a better understanding of how cancer proliferates. This research has led to advancements in treatments and increased survival rates. However, there remains no cure. (WHO, 2018) Morocco's healthcare system does not address many problems that hinder citizens from seeking treatment and preventing cancer effectively. Moroccan citizens still face outdated medical practices, beliefs, and financial setbacks (Ghanem et al., 2011; As, 2016; Mazellier 2018).

Because of a strong religious presence and certain cultural norms, medical beliefs in Morocco are different compared to those in Western culture. There is a large focus on the efficacy of holistic and spiritual methods for treating illnesses. Medical professionals will often opt for these practices over more acute treatments like medicines and radiation. In 2011, only 22% of nurses and 80% of doctors believed that prayer, herbal or alternative medical therapy could *not* cure women of breast cancer (Ghanem et al., 2011). In recent years, medical

knowledge has progressed but practices have remained unchanged. In 2016, 91.6% of nurses had received training in cancer prevention. However, 90% did not conduct clinical breast exams. (As, 2016)

Social apathy towards deadly diseases also contributes to the lack of awareness and preventive practices often found in developing countries. This apathy results in social stigmatization which further isolates the patients and worsens their conditions (Nejmi, Wang, Mendoza, Gning, Cleeland, 2010). Anecdotally, women often find that their husband's support is contingent on their ability to look "beautiful" and be available for them. Once these conditions can no longer be met, they fall victim to isolation and financially hopeless situations. One woman at Association Jannat expressed the pain of being left by her husband due to her disease, saying "Did you see me, what man would like me like that?" (Mazellier, 2018). Sociologist Soumaya Naâmane Guessous affirms this sentiment:

"In the collective consciousness, the breast is the ultimate symbol of femininity. If it is damaged or removed, the woman loses all her power of seduction. The uterus is the organ of procreation, but there is also the idea for man that a woman without uterus is like a bottomless well. So making love to her would necessarily be a sign of dissatisfaction" (Mazellier, 2018).

Additionally, the instinctual fear of death often results in a subconscious dissociation with reality. This fear is intensified in places like Morocco where cancer is not yet fully understood, especially by the general public. One author writes that there is a "modest degree of apathy and resignation towards the illness" (Mahon, 2017). This resignation contributes to a lack of promotion of awareness, which is often the cause of late diagnoses. Because of this stigmatization, in addition to limited access to knowledge and self-examination methods, most women with breast cancer present themselves to their healthcare professionals with advanced cancer, which leads to an increased risk of death (Khalis et al., 2016).

Moroccan cancer patients also face the high cost of cancer treatment. For two-thirds of the population who do not have health insurance, the most basic treatment costs up to 1.15 times the annual minimum income of a Moroccan citizen (Boutayeb et al, 2010). This high cost causes not only the women and families who are affected by the diagnosis to question whether or not to seek treatment, but also causes officials who create the national healthcare plan to question if treating poor patients is economically sustainable (Boutayeb et al, 2010). Nonetheless, Morocco has instituted a national government-funded plan for cancer research and prevention. However, it does not pay for cancer treatment (Selmouni, 2018). NGOs that provide supplemental care for cancer patients have become increasingly relevant because of this.

2.3 Cancer Patient Support in Morocco

This section discusses the Lalla Salma Foundation and Association Jannat, two NGOs that seek to mitigate the socioeconomic effects of cancer in Morocco.

2.3.1 Introduction to The Lalla Salma Foundation:

We conducted research on Moroccan NGOs that aid cancer patients. Out of the 115,000 NGOs registered in Morocco, the Lalla Salma Foundation for Prevention and Treatment of Cancer is one of the oldest organizations dedicated to creating a national plan for fighting cancer (Lalla Salma Foundation, 2017). The Lalla Salma Foundation supports cancer research, awareness, and improving the quality of life for cancer patients. An example of their not-for-profit work is their "Maisons de Vie" - Houses of Life - which are located across Morocco. They accommodate patients and their families during outpatient treatment periods (Lalla Salma Foundation, 2017). These houses of life offer housing, transportation to and from the hospital, and supplemental services (Bekkali, 2017). Each location offers between 6,000 and 12,000 overnight stays for patients and families annually (Lalla Salma Foundation, 2017).

2.3.2 Introduction to Association Jannat:

Association Jannat is another NGO that aims to support cancer patients in Morocco. Khadija El Qorti founded Association Jannat in 2009. After losing her husband and sister to cancer, with her available time and resources, she opened her home to female cancer patients in need of a place to stay while receiving treatment in Rabat. (Albertelli, 2016) The organization's name comes from Mrs. El Qorti's desire to provide a "Jannat" or "paradise" for the women she houses (El Qorti, personal communication, January 18, 2019).

Association Jannat has a maximum housing capacity of thirty women. There are fifteen beds in Mrs. El Qorti's home and fifteen more at a nearby rented apartment. Each woman is given a bed, daily meals, transportation to and from their treatment center, and support from the community of cancer patients and the staff. Figure 5 shows patients gathered together in the main room for music and dancing. (Association JANNAT Pour L'hébergement Gratuit des Malades Cancéreux, n.d.) Additionally, the organization sets aside approximately 500 dirhams per

Figure 5: Patients gather in the main room at Association Jannat for music and dancing.

month per patient to purchase the necessary prescriptions that they cannot afford (Errajy, 2017). A social assistant, secretary, kitchen staff, cleaning staff, and a driver are employed by the organization (Association JANNAT, n.d.). The women at Association Jannat are very grateful for all of the services they receive at the association, especially the level of social support. In a conversation our team had with a patient, she expressed her gratitude by saying "I feel very happy right now, at the association. I don't feel like I am sick at all." This quote and additional ones from patient conversations can be found in Appendix O. The typical length of stay for patients is twenty to twenty-five days, but varies depending on the stage of cancer and treatment plan (Errajy, 2017). Mrs. El Qorti wishes to expand the organization to care for approximately fifty women (Albertelli, 2016). Supporting these women at this level takes an abundance of time

and energy from the staff. In order to do this at an even larger scale, Association Jannat must overcome some challenges that restrict its growth.

2.3.3 Challenges Facing Association Jannat:

Association Jannat faces challenges concerning their data management, inconsistent funding, and limited housing capacity. Upon introduction to the association, the challenge they requested we focus on was their outdated system of data storage and retrieval. The current system consists of paper files stored in a distant office within the house. The paper files for each patient are organized by entry date and year. However, the association houses approximately 300 women each year and does not have enough space for new patient files (Sassioui, personal communication, January 9, 2019). With the paper system, it is difficult to quickly access patients' files, track employee scheduling, maintain a registry of donations and keep inventory of their resources and medications (Sassioui, personal communication, November 19, 2018). This system also makes it nearly impossible to run statistics and analyze data since this information must be calculated by hand (Sassioui, personal communication, January 9, 2019). The files are also vulnerable to damage and loss.

The association also faces other challenges, such as inconsistent funding and limited living space and patient resources. The organization currently relies upon Mrs. El Qorti's late husband's pension and anonymous donations of money, medicine, and other miscellaneous items. Therefore, their monthly income is not fixed and is occasionally insufficient. Consequently, the organization must ration these resources and the services it provides patients. Their limited income occasionally causes food shortages, unpaid water and electricity bills, and the inability to purchase gasoline and cleaning supplies for the two houses. Financial limitations also prevent Association Jannat from properly compensating their employees. (Association JANNAT, n.d.) Many are paid less than minimum wage or not at all. This challenge creates a shortage in staff members and subsequently, a decreased quality of patient care. (Sassioui, personal communication, November 19, 2018) These problems are compounded by the association's inability to track donations and resources.

2.4 Introduction to Databases:

Mr. Sassioui suggested creating a database to store all useful information and increase accessibility for the association's employees. Databases are a widely used system to input, organize, and retrieve data. They are computerized files of compiled and organized data that can be used for data storage and analysis (Manning, 2015). With a database, it is possible to record all of the association's current and future patient, employee, and donation information. The database would streamline access to desired information by allowing the user to query data within seconds, eliminating the need to manually search through papers. In addition to organizing data in multiple tables. It can access all data within a certain criterion, edit multiple records at once, and perform calculations across multiple tables. (Berrington, 2014) It could also display which patients need what medications and services and aid employees in analyzing demographic trends for personal reflection and increased promotion of the association.

Databases for Small Business Essentials of Database Management, Data Analysis, and Staff Training for Entrepreneurs and Professionals by Anna Manning lists important steps to create an effective database. The most important step in the database design process is to identify the database's purpose. It is essential to map out how the database will report valuable data to fulfill its mission. Therefore, Association Jannat first established a clear purpose for the database before beginning the second step of incorporating data to fulfill it. The third step listed by the book is to neatly organize this data within tables for the program to recognize and utilize. These tables require relationships and rules for the program to recognize and use within its data analysis. Once these relationships have been established, the user can generate queries and reports across multiple tables. A record containing sample data can serve as a control to test whether the program works in the desired way and avoid errors within data analysis. The final step stresses the importance of communicating the design of the database to inexperienced users so they can effectively use it in the future. (Manning, 2015)

A database management system (DMS) is a program that runs database operations requested by the user. There are two types of DMSs that could be used for Association Jannat. The first is a desktop-based system that allows a single user to use the DMS and database, usually stored on a personal computer. It is relatively inexpensive to use for simpler data. The second type is a server-based system, which allows multiple people to edit and apply the DMS on the same database. This server would offer the ability to use more complex data but requires expensive high-performance software and special training to read the data. (Berrington, 2014) It is necessary to specify which type of DMS would best suit the association's needs.

2.5 Change Management and Implementing Transitional Change

Change management techniques were researched in order to best implement a new data management system at Association Jannat. Change management is "a structured approach to shifting or transitioning individuals, teams and organizations from a current state to a desired future state" (Peacock, 2017, pg. 22). This is important for Association Jannat as they transition from using paper files to the database. Change management techniques will ensure that the employees feel comfortable enough to use the database once we have left Morocco.

Transitional change is a category of organizational change, which encompasses change management practices specifically used for organizations. Transitional change occurs when an entirely new system replaces a current system, and is the process used for implementing a database at Association Jannat. The change management process

Figure 6: Diagram displaying phases of the change management process.

typically consists of three phases. Phase one is preparing for change, phase two is managing change, and phase three is reinforcing change (Tamilarasu, 2012). This process is described in further detail in Figure 6.

In order to properly prepare employees before implementing transitional changes, managers must carefully plan an implementation strategy. It is also necessary to assess the

employees' willingness to change and identify potential areas where they may resist the change (Prosci, n.d.). Visual aids such as Gantt charts are especially useful for tracking progress and achievements.

The second step requires the participants to actively incorporate the change into their daily lives. Celebrating important milestones and achievements boosts employee morale and ensures that the employees are engaged in the change. (Peacock, 2017) This step is important to transitional change because people are more likely to support the change if they feel they are being included in its process. Specific methods to increase employee engagement include consulting employees from changed areas, designing a method to gather employee feedback throughout the change process, and ensuring the involvement of all employees in planning the change process. (Tamilarasu, 2012)

The last step instructs the reinforcement of the change: the participants must recognize and correct any actions that do not follow the implemented change. For example, the participants can reflect on all actions to find any actions that do not agree with the change they promised to follow and create solutions that support the desired change.

The next chapter discusses the methods which we used to accomplish the overall goal of implementing a database and improving data management for Association Jannat. We explored the technical and social aspects of this project and proposed recommendations to expand and enhance the services that Association Jannat provides.

Chapter 3: Methodology

3.1 Introduction to Our Objectives:

Association Jannat, located in Rabat, Morocco, has requested a more efficient way to manage their data. In order to fulfill this request, we outlined and completed two objectives:

1) Designed an easy to use, efficient database that contains patient information, a registry of donations and funds, an employee directory, and a medication inventory.

2) Gained perspectives from the Lalla Salma Foundation and the patients at Association Jannat to provide recommendations on how to enhance data management and expand beneficiary services.

3.2 Objective 1: Designing a Database for Association Jannat
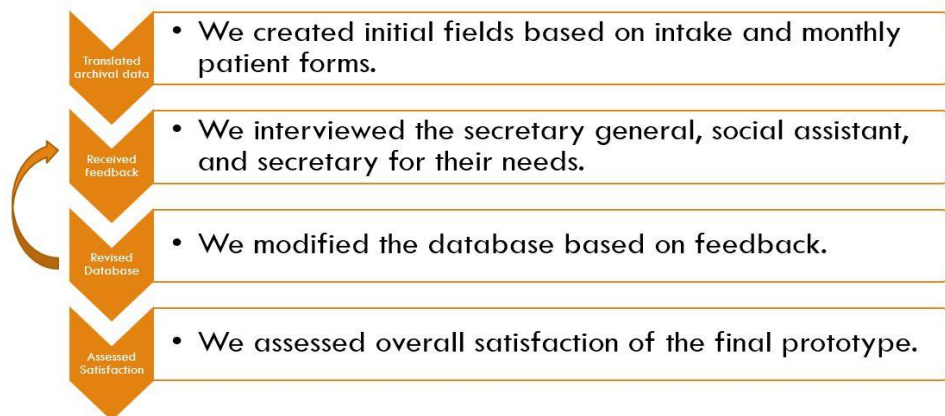
Figure 7: Infographic displaying steps taken to create the database.

We created a database that included all of the information that Association Jannat needs on a regular basis. Specifically, this information includes beneficiary, donation, and employee information.

3.2.1 Data Collection

Once in Morocco, we interviewed Mr. Sassioui and Ms. Ibtisam Ouayashn, the social assistant, in order to understand how their data is stored, what types of data they access most frequently, and what database features they were interested in. Our list of questions are located in Appendix A.

We decided to use Microsoft Access after database research and consideration of the limitations of their current system. After learning how to use Microsoft Access, we created a prototype consisting of fields used by Association Jannat that demonstrated the basic abilities of the operating system. Through a series of interviews with Mr. Sassioui and Ms. Ouayashn

throughout the term, we gathered feedback on the database and made modifications to it accordingly. Once their concerns were resolved, we presented Mr. Sassioui and Ms. Ouayashn with the database so that they could practice using it for two weeks. After familiarizing themselves with the database, we interviewed Mr. Sassioui and Ms. Ouayashn about the usability of the database and their satisfaction with it. The questions asked during these interviews are located in Appendix B. We took this feedback into account when we made the final database modifications.

3.2.2 Training Database Users

After downloading the database onto their computer, we trained Mr. Sassioui and Ms. Ouayashn on basic tasks, such as inputting new patients' information and generating queries, reports, and statistics. Additionally, we provided them with video tutorials and written manuals in French for them to reference after we left. This training technique provided them with guidance as they navigated through the database.

3.3 Objective 2: Gaining Perspectives to Provide Recommendations

In order to better understand how to enhance data management and expand services at Association Jannat, we researched and visited the Lalla Salma Foundation. We have also conducted conversations with patients to understand what additional services they believe Association Jannat can offer. This helped us complete our second objective of creating a list of recommendations for the association to reference as they continue to grow.

3.3.1 Data Collection

For this objective, we first researched organizations similar to Association Jannat. We identified the Lalla Salma Foundation as the most similar in purpose, services, and type of people served. We visited the House of Life for adults in Casablanca in order to understand how they manage their data and see what services they provide to their beneficiaries. This information aided us in providing Association Jannat with recommendations on how they can facilitate growth and expansion in the future. We prepared questions to ask Mr. Brahim Adnane, the director of the Houses of Life in Casablanca, that helped us compare services to Association Jannat that we would then use to justify recommendations. These questions are located in Appendix C.

We also interviewed Association Jannat's patients for their stories and for any suggestions to enhance the association's services. Our primary question while interviewing patients was simply "Is there anything that you would like to see at Association Jannat that it does not currently have? ". We chose this question, along with its wording, to ensure that patients felt comfortable sharing their honest thoughts. Additionally, we worded the question so that the patients were not hesitant to answer because of their positive relationship with the executive team or a fear of potential consequences. Nevertheless, we decided to explicitly tell each patient that we interviewed that their responses would be anonymous and kept private if they so desired them to be. The official script for the patient interviews is located in Appendix D.

3.4 Ethical Considerations:

One ethical consideration was the protection of patient privacy in regards to their medical records. There is a law that prevents sensitive information being shared with non-essential personnel such as our team. Law 1-09-15 enforces data privacy within Morocco by limiting the disclosure and use of personal and sensitive data by the data controllers in any data process operation (Mounia, 2015). Therefore, we took steps to avoid this breach of patient privacy by only using the association's blank forms to create the forms and tables in the database.

We also wanted to ensure that the patients' interview responses were kept anonymous. Before conducting patient interviews, we asked the executive board of Association Jannat whether they would accept possible criticism from their beneficiaries about the services they provide. Expressing feedback may not have been welcome or could have been considered offensive, which could hurt the interviewer and interviewees' relationship. Since the association welcomed constructive criticism, we took precaution with the information shared between the two parties in order to keep the parties' relationship in good standing. Each time we wished to record the responses of an individual, we began by asking about their willingness to be recorded, quoted, or cited. This method clarified what feedback the interviewee wished to share with the association. Once the permitted feedback was recorded, we collected the suggestions they provided and developed a list of recommendations. We then presented a summary of recommendations to the executive board of Association Jannat.

Chapter 4: Results and Analysis

Upon arriving in Morocco, we examined Association Jannat's existing method of data management. We conducted interviews with our sponsors to understand their needs and desires for the database implementation and data management. From these conversations, we identified the best structure for the database in addition to the database features most important for the association. We also generated a list of recommendations based on a visit to the Lalla Salma Foundation and patient feedback.

Below is a summary of our key findings:

- We determined that a Microsoft Access database with input fields and an organization similar to their current paper files would allow the association to most easily adapt to the new database.

- The association needed a database that could generate statistics and visual data so they could more easily promote the association's image and story to potential donors

- The association needed a database that could streamline data management, which could also increase the amount of time that employees are able to spend taking care of patients.

- The Lalla Salma Foundation also uses a similar database to manage their data, which we were able to compare to the Association Jannat database and learn from.

- The Lalla Salma Foundation partners with other organizations and companies to run activities for their beneficiaries.

- While all the patients praised Association Jannat for its humanitarian service, some women provided feedback on how they believed the association could improve its services.

4.1 Objective 1: Database Design and Implementation

This section will discuss how we chose Microsoft Access, and the overall structure of the database. It also explains some of the important features of Microsoft Access and how Association Jannat can utilize them to expand their outreach.

4.1.1 Choosing a Database Software

In order to choose the best database, we compared different software using criteria we derived from previous research. We evaluated four different free database software: Microsoft Access, Microsoft SQL Express, MongoDB and CouchDB. Additional information on how we evaluated each software is located in Appendix E. Our research showed that Microsoft Access was the best option because it was the most easily accessible and made with user friendly features such as built in form, query and report generation. Additionally, Microsoft Access has a variety of tutorials available in English, French and Darija. By using shared network folders, it is possible to access updated versions of the database on all local computers. It is also possible to backup the database to the 'Cloud' or an external hard drive to protect information in case of an emergency.

4.1.2 Database Structure

The database's complete construction can be seen through the production timeline and screenshots of the final version in Appendices F and G, respectively. Figures NUMBER demonstrates a summary of the database's structure.
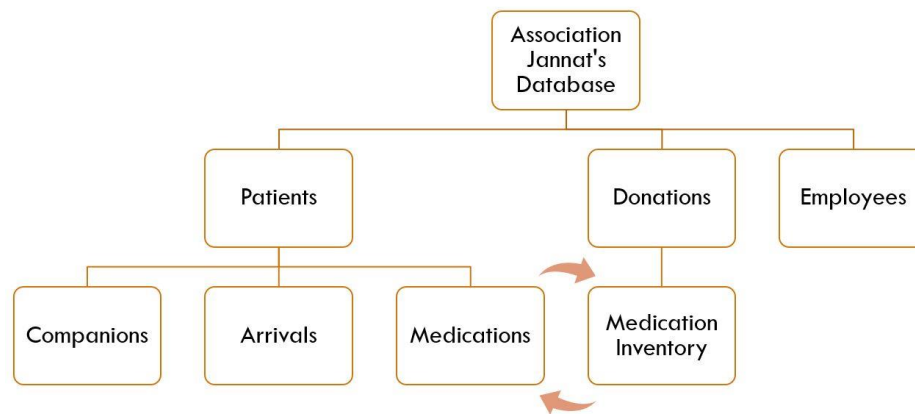

Figure 8: Diagram of database structure

We first reviewed the Patient Intake form, which all new patients are required to fill out. We translated this form from Arabic to English and recorded the fields in Appendix H. We created this same form in the database, using the same structure and format of the paper form so the employees could more easily adjust to the new system.

Through interviews with the secretary general and social assistant, we identified frequently used information that they would like incorporated into the database. The interview responses from the employees are located in Appendix I. These interviews were conducted according to the change management practices discussed in section 2.5. By immersing the employees in the development of the database, we encountered concerns that we addressed in updated versions of the database. These employee interviews guided our construction of the database architecture and format.

These interviews revealed that Mr. Sassioui is most interested in using the database for **creating reports**. Often, journalists, public media sources, and donors seek to learn more about the association's humanitarian impact. For these publications, it is important that Mr. Sassioui has easy access to relevant and meaningful information about the association. Example reports contain demographic information, such as the patients' cities of origin, types of cancer, and insurance types. Mr. Sassioui also meets with other organizations to promote Association Jannat's mission and to seek potential funding. The information found in demographic reports is extremely beneficial for demonstrating the impact of its work and increasing the association's public awareness. Therefore, we included a method for creating visual displays of data through these reports.

This interview also highlighted the importance of a **medication inventory** in the database. Mr. Sassioui dispenses patient medication and tracks the medication inventory. He stated that sometimes the medication expires or runs out unexpectedly and it is difficult to know what medications the association will need more of at a given time. To satisfy this need, we

added a table to monitor the inventory of medication in Association Jannat's pharmacy. The table contains the name of the medication, the quantity, the expiration date and if it is a frequently used medication. Another table contains information about patients who receive medication from the association. This table is organized by patient file number and contains the date prescribed, the dosage and name of the medication. Mr. Sassioui requested that we create an automatic alert system within the medication inventory table that would notify him when a medication was near its expiration date or was nearly out of stock. It is possible to accomplish this in Microsoft Access through SQL programming, but we have no experience with this programming language and were therefore unable to create this feature. Mr. Sassioui also requested that the medication quantity update automatically when a patient is given medication. Despite researching methods, we were unable to find out if it was possible to add this feature.

The second interview focused on Ms. Ouayashn's database suggestions. Ms. Ouayashn, the social assistant, is a clinical psychologist who performs administrative duties at Association Jannat. She meets frequently with patients to check on their physical and mental health. In this interview, she stated that she has difficulty meeting with all of the women she needs to in one day, so she focuses on patients who require special attention. This is often the poorer women because they do not have access to the same treatment options as those with more financial resources. She assesses the financial status of a patient based on the type of insurance they have, if at all. So, we created a field for listing the patients type of insurance so Ms. Ouayashn can compare each patient's financial situation in a faster way than with paper files.

Patient and companion data was organized based on the fields provided by Association Jannat in their paper records. The fields used in the patient tables include: patient name, national identification card number, health insurance identification number, location, diagnosis, hospital name and address, phone number, health insurance information, family information, how they heard about Association Jannat, patient photo, and whether or not they have a companion with them. Companion information such as name, national identification number, and phone number was stored in a sub-table. Another sub-table was created to store information about the duration of stay so that multiple visits can be recorded for each patient. All of these subtables are linked to the main table by patient file number, which is used in order to preserve patient privacy.

An additional table containing **donation information** was also created. The necessary fields for this table included date and types of donations, including a field labeled "miscellaneous donations". This field refers to 'in kind' donations such as blankets, services, food and medical equipment as opposed to monetary contributions.

The **employee table** contains the employee's name, national identification number, hours worked, and role at the association. To follow the second step of transitional change, we inputted employee information we received from Association Jannat and observed that including real data made the employees much more enthusiastic about the database.

4.1.3 Continuous Improvements

We met with Mr. Sassioui and Ms. Ouayashn frequently in order to gather feedback on the database and update it to suit their needs. The database was initially created in English, which made it difficult for the users to visualize how the system could help them. In order to accommodate Mr. Sassioui and Ms. Ouayashn, we changed the field names and patient records to French and Arabic. We also inputted actual patient data from Association Jannat's yearly

patient records. The combination of translating the database into French and Arabic and including actual patient information proved incredibly helpful. Mr. Sassioui and Ms. Ouayashn were much more receptive to the database after this change and were able to help us test the database by entering more patients. Figure 9 shows an updated version of the employee table with accurate employee information such as the hours worked and the employee's role at the association.

Nom	Prenom	Carte Nationale	Horaires	Titre
				President de l'Association
				Tresorier
				le secretaire general
				Consultant 1
				Consultant 2
			9h 17h	Aide cuisiniere
			9h 17h	Aide avec la societe
			17h 23h	Aide cuisiniere
			9h 17h	Aide cuisiniere
			Continue	Ecrivan
			Continue	Assistance sociale
			Matin	Femme de menage
			Du lundi au venc	Conducteur

Figure 9: Employee table containing actual employee information. Some information has been redacted to preserve privacy.

4.1.4 Database Tutorials

We created video tutorials and a written manual describing how to use the database. They were created to teach both present and future employees of Association Jannat on how to utilize the database. We created the video tutorials in order to help the employees initially learn tasks. The written manuals were created to provide additional support as employees start to complete tasks on their own. Written manuals are easier to reference when looking for reminders of specific steps instead of watching a step by step explanation.

We took multiple steps to research, write, create, and edit the written manual and video tutorials. Initially, we isolated a list of common database functions that we expect the employees to use and prepared a manual for them. This document of explanations was then translated into French. The French tutorial was used as the video tutorials' script. The English and French versions of this document are located in Appendix J. Along with the manual, we created a document that defined key terms often used in Microsoft Access in English and French, located in Appendix K. This document will serve as a reference for employees if they are confused by any terms used in video tutorials or the written manual. The video tutorials we created as well as additional tutorials we found useful are linked in Appendix L.

4.1.5 Employee Feedback

In order to understand the employee's satisfaction with the database, tutorials, and manual, we asked Mr. Sassioui and Ms. Ouayashn to rate their usability and the helpfulness on a scale of 1 to 5. The responses to these questions are located in Appendix M. From these interviews, we found that both of them were satisfied with the content of the database. However, they both had problems when it came to generating queries, reports, and statistics. We found that the manuals we had given them in Arabic were not sufficient to teach them how to accomplish these tasks. As a result, we decided to provide them with manuals in French and additional video tutorials.

4.2 Objective 2: Gaining Perspectives to Provide Recommendations

This section will discuss the results of our team's efforts to gain further perspectives on how to enhance data management and expand the services that Association Jannat provides.

4.2.1 Comparing the Lalla Salma Foundation and Association Jannat's Data Management Systems

Our team visited the Lalla Salma Foundation in order gain an additional perspective on how NGOs in Morocco manage data and provide services to cancer patients. The database at the Lalla Salma Foundation is very similar to the one we created for Association Jannat. It serves as a data management system primarily for beneficiary information. It was created by four engineers in Microsoft SQL in 2014 and is server-based. Table 4.1 summarizes the key similarities and differences between how the Lalla Salma Foundation and Association Jannat manages data in their respective databases.

Table 1: Similarities and differences of database management at Association Jannat versus the Lalla Salma Foundation.

Similarities	Differences
- Both record basic information about their patients: patient name, duration, companion information, National identification number, file number, type of cancer, etc. - Both record donor information anonymously. - They both still use paper files in conjunction with a database.	- The Lalla Salma Foundation has a function in the database that calculates statistics automatically (not a query; example of enhanced capability). - The Lalla Salma Foundation records the hospital visits, treatment types, and names of the doctors who are responsible for releasing patients and setting departure date. - If the person accompanying a patient is not a family member, then they have to purchase "commitment insurance" to ensure they will not leave the patient.

From this visit, we gleaned some helpful suggestions for Association Jannat's digital data management. Since the Houses of Life program runs differently than Association Jannat, the structure of the database is catered more towards accessing the patients' hospital information. We also learned about additional services that the Lalla Salma Foundation provides to their beneficiaries, such as religious celebrations and events sponsored by local companies, such as L'Oréal Maroc. A detailed list of information gained from our meeting with the Lalla Salma Foundation can be found in Appendix N. These findings have also inspired recommendations to enhance Association Jannat's data management and services discussed in the following chapter.

4.2.2 Patient Feedback

We also gained the perspective of patients staying at Association Jannat in order to understand areas they thought could be improved within the association. While all patients praised Association Jannat, some women had suggestions for improvements. One woman explained how when she arrived at the association, she was reluctant to stay because she was not accustomed to living in close quarters with other women. She brought her privacy concern to the attention of the president who then moved her to their second, less occupied location. Another woman added that she wishes Association Jannat could provide more funding for medical services such as MRI's. Complete transcripts of these interviews as well as interviews we conducted with other patients are located in Appendix O.

However, we must consider how we may not have gathered all suggestions for helping Association Jannat grow. Not all of the women may have felt comfortable voicing their concerns. A few of them we spoke to expressed how they could not criticize the association because of all the care they provide. Therefore, the suggestions we have received may not be all possible suggestions to better Association Jannat. In order to address the concerns of the beneficiaries, and to provide suggestions on how best to implement the database, we have developed a list of recommendations to enhance Association Jannat.

Chapter 5: Recommendations and Conclusion

Based on our findings from patient interviews, feedback on the database, and a site visit to the House of Life program, we have developed a list of recommendations for Association Jannat. These recommendations were created with the goal of enhancing the database implementation plan, the data management plan, and other patient services that Association Jannat provides. The end goal is for these recommendations, in conjunction with the database, to increase the amount of time employees have to spend with patients and create visuals using statistics for increased funding and publicity. Table 5.1 is a summary of our key recommendations.

Table 2: Recommendations based on enhancing database implementation, data management, and Association Jannat's services.

Database Support	Data Management	Expanding Services Provided by Association Jannat
1. Continue to learn how to use database by watching tutorials in French and Darija. 2. Contact students at nearby universities who can enhance the capabilities of the database and provide on-site assistance. 3. Improve statistical analysis capabilities. 4. Backup database frequently ensure data protection.	1. Add existing beneficiaries to the system as well as new arrivals. 2. Track patients' visits to hospitals, treatments received and doctors' names. 3. Train Ms. El Qorti and Mr. El Qorti on respective database tasks. 4. Continue to create statistical comparisons and trends that can be used for outreach, public relations and encourage donations.	1. Increase privacy options for beneficiaries. 2. Increase availability of medical care and medication. 3. Partner with more organizations to provide beneficiary enrichment.

5.1 Database Support

This section discusses recommendations for Association Jannat in reference to the technical aspect of Microsoft Access.

5.1.1 Further Understanding of Microsoft Access

We recommend that Association Jannat **learns how to use Microsoft Access from outside sources** in addition to the tutorials we created. We believe that gaining further knowledge from different sources would be beneficial for the database users. These sources could provide different methods for managing data or explain advanced features we did not address. There are a number of video tutorials available on YouTube in Darija and French specifically for Microsoft Access 2010. Professional tutorials also include more advanced features that would be useful if the association decides to further develop the database on their own. These tutorials would also be beneficial if a function within the database fails to operate correctly. We created a playlist of supplemental tutorials, located in Appendix L.

5.1.2 Database Expansion and On-Site Assistance

We suggest that the association contacts Mr. Mohammed Salhi, an ENSIAS doctoral student, to **initiate communication with university students familiar with Microsoft Access and SQL**. These students would have the knowledge necessary to make repairs if the database malfunctions and could enhance its capabilities if the employees want to have more sophisticated features. For example, Mr. Sassioui requested a notification system for medication expiration dates and automatic updates to the medication inventory after medication is given to a beneficiary. However, we were unable to accomplish this due to limited experience with Microsoft Access and SQL. Additionally, these students can provide on-site help to Association Jannat should they experience future problems with the database. Finding volunteers to help implement this recommendation would be most advantageous for Association Jannat.

5.1.3 Improving Statistical Analysis Capabilities

Microsoft Access supports Arabic text in tables, forms, queries and reports, but while working with the database ourselves, we learned that it does not support Arabic text in graphs, as shown in Figure 10. There are two possible solutions to this problem: export data into Microsoft Excel to perform statistical analyses, or translate the entire database to French. Exporting data to Microsoft Excel takes little time because it is a built-in feature within tables, queries, and reports. Additionally, Excel has more capabilities for analyzing data than Access. These statistics would take slightly more time to create, but the quality of analysis would increase. An example of a graph created in Microsoft Excel is shown in Figure 11. If Association Jannat continues to use Access alone for statistical analysis, all field names and records would have to be translated into French and all Arabic text removed. This can be accomplished using a query or the "Find and Replace" tool. This option would initially be the most time consuming, but would require less time in the long term.
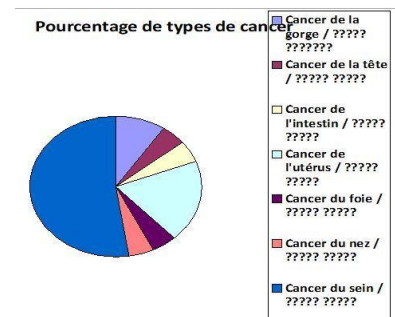

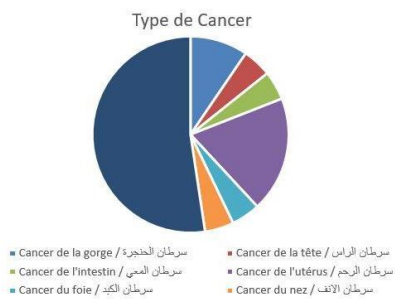*Figure 11: Visual statistic created by Microsoft Access.*

Figure 10: Visual statistic created by Microsoft Excel.

5.1.4 Database Backups

It is very important to backup databases frequently in order to protect the information stored in the event that the information is lost due to a computer malfunction. We recommend that Association Jannat **purchases an external hard drive to store their data**. A portable hard drive is ideal for storing important information because they are relatively inexpensive and can be stored easily due to its small size. In the event of an emergency, the employees can take the external hard drive out of the building more easily than their desktop computers. We suggest that Association Jannat **backup their database at least once a week**, but should do so more frequently in order to ensure that all records are protected. It is especially important to backup their data when there is a high volume of incoming beneficiaries to prevent the information from being lost.

It is also possible for Association Jannat to backup the database to the Cloud using an online service such as IDrive or Norton Online Backup. These types of services typically charge a monthly or annual fee to use and require a secure Internet connection. Although online backup services are common in the United States, they may have limited availability in Morocco.

5.2 Data Management

This section discusses our recommendations to further improve the database from a data management perspective.

5.2.1 Inputting New and Existing Beneficiary Information

We suggest **adding at least 100 to 200 existing beneficiaries from 2018 to the system** in addition to future beneficiaries. The employees can use the paper files to input beneficiary information into the database. The more beneficiaries that are added to the database, the more accurate the statistics generated will be. Accurate statistics can increase public interest in the association by portraying their impact and story more accurately, which may stimulate philanthropic efforts. An increase in donations would allow the association to enhance their services. Including more beneficiaries in the database would also help employees find information on returning patients more quickly. The increased efficiency of data access would allow employees to spend more time with the women. From our results, we know that the women highly value the social support given to them by the employees.

5.2.2 Statistics Applications

In order to get the most use out of the database, we recommend that Association Jannat **generates visuals using statistics based on the demographic information they collect on their beneficiaries**. Statistical analyses will allow Association Jannat to identify demographic trends, which will help the executive board make decisions that result in better care for current and future beneficiaries. For example, if a large portion of the beneficiaries receive the same treatment for lung cancer and use the same medications, they could ensure that they maintain a larger inventory of that specific medication. In addition, these statistics would provide the public with helpful information about the association and its beneficiaries. This could enhance

Association Jannat's relationship with the public, increase interest in its mission, and potentially increase donations.

Generating statistics that support a particular message is also beneficial for raising funds, especially when applying for grants. Grant proposals require statistical information for each aspect of the organization, from beneficiary information to budget distribution. This is a common process for organizations similar to Association Jannat.

5.2.3 Secretary and Treasurer Database Usage

We recommend that the association's secretary, **Ms. Saida El Qorti, be trained on how to use the database**. Ms. El Qorti is responsible for welcoming patients when they arrive at Association Jannat. This includes making them feel comfortable, building their trust in the association, and recording their information on the Patient Intake Form. We saw this as an area where the process can be made more efficient. We recommend that Ms. El Qorti inputs beneficiary information into the database and the paper files concurrently. Since the beneficiary intake form in the database is a replica of the paper form, this task does not require a large adjustment or a time-consuming training process. This would also decrease the time spent transferring information between employees and promotes usage of the database. Furthermore, training Ms. El Qorti would encourage the training of future employees who interact with the association's data. Additionally, by teaching new users how to use the database, employees who are already trained can solidify their understanding of the database. Having more employees who can use the database would be advantageous in the event that one employee is out sick or leaves the association. It increases the chance that someone who can use the database will be at Association Jannat.

We also recommend that the treasurer of the association, **Mr. Sahl El Qorti be trained** in relevant tasks on the database. He is currently responsible for receiving donations and recording their amount and type within the paper records. Mr. El Qorti is also responsible for managing the association's monthly financial and miscellaneous donations. Therefore, our team believes that it would be most beneficial for him to know how to input and continuously update donation information by using the donation form. Having all employees who record information for the database participate in learning and using the database would be an effective way to manage their data. Another way to enhance data management would be to improve patient tracking.

5.2.4 Tracking Patients

After looking through the database at the Lalla Salma Foundation's House of Life in Casablanca, we determined that it would be useful for the association to record patient visits to the hospital, the treatments that they receive, and the names of their doctors. Information about visits to the hospital and treatments received would inform the employees at the association who attend to the patients of specific mental, emotional, physical, or spiritual needs they may have. Recording the names and contact information of the doctors that help the patients would allow the association to quickly contact them in case of an emergency. Furthermore, increased communication between the doctors and Association Jannat would contribute to a better understanding of the patients' needs, thus increasing the quality of care.

5.3 Expanding Services Provided by Association Jannat

This section discusses recommendations to enhance the services provided by Association Jannat based on our conversations with patients and visit to the House of Life in Casablanca.

5.3.1 Privacy of Beneficiaries

We suggest **creating more privacy** within the patient room in the association's main building. After interviewing the association's patients, we found that one patient preferred to live in a more secluded space, opting to reside in the second, less occupied home. For the future, we recommend that **the association hangs curtains between beds** to increase privacy among women. Although the beds at the association are too close to put curtains in between them, it is possible to put up curtains between every few beds to create smaller spaces. This increase in privacy would help patients feel less overwhelmed by the number of women in the room. Also, a curtain can be retracted, which allows the sense of comradery and support to be revitalized.

5.3.2 Availability of Medical Care

We recommend **increasing the patient's medical care and access to important medications**. During beneficiary interviews, one of the women expressed how she struggles to pay for her cancer treatment. She suggested that the association should try to raise more funds to help pay for treatments because they are very expensive. We realize that Association Jannat has limited financial resources. Therefore, this recommendation should be addressed when donations increase from the implementation of other previously mentioned recommendations. Mr. Sassioui also mentioned that there are occasional donors who pay for a patient to receive medical services such as an MRI, but it is infrequent. We propose that the association follow her advice by allocating a portion of their funds towards medical services. Therefore, the association can help more patients who cannot afford to pay for their cancer treatment.

5.3.3 Partnership with Other Organizations

We recommend that Association Jannat **partner with outside organizations to provide their beneficiaries with more free activities**. Our results indicate that the women at The Lalla Salma Foundation and Association Jannat have benefitted from such activities. For example, the Lalla Salma Foundation has partnered with L'Oréal Maroc to provide free skincare treatment for their patients (Lalla Salma Foundation, 2017). Association Jannat formerly partnered with a local gymnasium to allow the beneficiaries to exercise once a week, free of charge. Organizations and companies benefit from collaborating with NGOs because they can expand their consumer base and improve their public image. These collaborations are beneficial to both parties by strengthening public relations and leading to potential funding opportunities. It is also apparent from our interview with Mr. Adnane that those at the Lalla Salma Foundation are interested in Association Jannat. Future partnership between the two may lead to new opportunities for both Association and its beneficiaries.

5.4 Conclusions

The recommendations we developed are intended to improve the efficiency and capabilities of Association Jannat's data management system. The database that was created allows employees to access, manage, and retrieve data more easily and quickly than they were able to while using the paper system. Improving their knowledge of the database and ability to

use it through our tutorials and other online sources will increase their abilities and further enhance the database's efficiency. Additionally, the employee's ability to create visuals using statistics will allow them to better understand and respond to the association's needs, and promote these needs to potential donors, other organizations, and the media.

Partnering with other organizations could provide opportunities for new activities and services that were not feasible for the association on its own. Patients greatly benefit from services, as they provide healthy physical, mental, and spiritual activity. Partnerships can also provide the association with more publicity and connections, which can lead to increased donations. Providing the association with their own crowdfunding page can also lead to increased donations. We hope that these changes and recommendations will provide the association with more time and resources that will ultimately lead to their expansion as an organization.

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Appendices

Appendix A: Initial Employee Interview Questions

Written By: Equal contribution from all team members

Translated By: Mohammed Salhi

Introduction: Hello, we are going to ask you a few questions about your job at Association Jannat. The goal of these questions are to understand your role at Association Jannat and how you use the patient files and system of organization currently. We are looking to understand how to best create a database of the records that would be easiest and most helpful for you to use. You may choose not to answer a question or stop the interview at any time. With your permission, we would like to record this interview and will delete the recording once we have transcribed the information.

Introduction: salut, nous allons vous poser quelques questions à propos de votre poste ici à association Jannat. Le but de ces questions est de comprendre votre rôle au sein de cette association et comment vous utilisez les documents des patients et le système d'organisation actuel. Nous cherchons à comprendre à mieux créer la base de donnée des enregistrements qui pourrait être la plus facile et serviable pour vous puissiez l'utiliser.

Questions:

1. Hello, how are you? Salut, comment allez vous?

2. What is your name? Comment vous vous appelez?

3. What is your role/position/title at Association Jannat? Quel est votre rôle/ position/titre à association Jannat?

4. How long have you worked here? Ça fait combien du temps que vous êtes ici?

5. What do you enjoy most about working at Association Jannat? Qu'est-ce que vous aimez le plus dans votre travail ici ?

6. Does your position require that you work with the files at AJ? What part of your job requires using the files? Est ce que votre position nécessite une interaction avec les fichiers? Quelle partie de votre poste requiert l'usage des fichiers ?

7. How often do you need to access patient files? Combien de fois vous accédez aux fichiers?

8. What information do you most frequently look for within the files? Quelle est l'information que vous cherchez le plus dans les fichiers?

9. Can you demonstrate the process for recording or finding information that you need? How long does this process take? Do you ever need to make a printed copy of the file? Aimeriez vous nous démontrer le processus de l'enregistrement ou la recherche d'information que vous en avez besoin ? Est ce que vous aviez besoin d'une copie imprimée?

10. What would be helpful for you to access patient files? Comment est utile pour vous d'accéder aux documents des patients?

11. Would it be useful to have access to hard copies of patient information? If so, what kind of information would be most important? EST ce que c'est utile d'acceder à des copies imprimées des patients? si oui, quelle information sera la plus importante que vous aurez besoin?

12. Do you have any other questions, comments or feedback for us? Avez-vous des questions, commentaires ou feedback?

Appendix B: Employee Database Satisfaction Interview Questions

Written By: Claire Sellen, Anna Carriero

Translated By: Hafsa Aziz

Introduction: The purpose of this interview is to gauge your understanding of the database in its current state and areas that could be improved. You may choose not to answer a question or stop the interview at any time.

1. On a scale from 1 to 5, please rank the ease of use of the following features (Please explain your response)

Task	1	2	3	4	5
Inputting patient data using form					
Inputting patient data using table					
Modifying patient data using form					
Modifying patient data using table					
Printing patient form					
Adding companion information					
Running query on patient information					
Generating a report on patient information					
Generating statistics from report					

2. On a scale of 1 to 5, how easy was the database to use **without** consulting the written manual? (with 1 being that it was impossible and 5 being that it was incredibly easy) Please explain your response

3. What type of tasks were you able to accomplish **without** the use of the written manual?

4. On a scale of 1 to 5, how helpful was the written manual? (with 1 being that it provided no help and 5 being that it answered all of your questions) Please explain your response

5. Were there any portions of the manual that were confusing? Or any topics that were not covered in the manual that you wish were explained?

6. On a scale of 1 to 5, how well does the database meet your expectations? (with 1 being that it is well below what you expected and 5 being that it exceeded your expectations significantly). Please explain your response

7. What is your overall satisfaction with the database (1 to 5) at its current state? (1 is extremely dissatisfied, 5 extremely satisfied). Please explain your response

8. Are there any features within the database you would like improved upon or changed?

Appendix C: Lalla Salma Foundation Interview Questions

Written By: Nathan Ouellet, Anna Carriero, Claire Sellen

Translated By: Hafsa Aziz

Introduction: Hello, thank you for meeting with us. We are a group of American students working in Rabat on a project for our university. We are working with an organization called Association Jannat, which houses and takes care of female cancer patients who cannot afford to stay in the hospital while they are receiving treatment. For the past two months, we have been creating a database to store their records and data. We came here today to learn more about how the Lalla Salma Foundation operates, what services the maisons de vie provide, and how they store beneficiary records and data. We are hoping you can help us by answering a few questions about the Maison de Vie program. Do you consent to having this conversation recorded so that we may transcribe it later? We will delete the recording once we have finished.

1. How many beneficiaries typically stay at the house at a time? Do they have companions who stay with them?

2. What type of information do you collect on beneficiaries? Companions, medications, employees?

3. How do you store their data (paper or electronic filing system, which software)? Who typically accesses it?

4. What information is most frequently accessed/checked?

5. What types of services are provided for the beneficiaries while they stay at the house?

6. What is the best part about working here?

Appendix D: Patient Interview Questions

Written By: Equal Contribution from all team members
Translated By: Mohammed Salhi

Introduction: Hi, my name is ___, what is your name? It's nice to meet you. Thank you for meeting with us. I am a part of a group of students who have been working with Association Jannat for about 4 weeks now. We are hoping you can talk to us a bit about your experience with the association.

We have a few questions for you, we would like to record your answers to for our project. The recording will be deleted once we have transcribed the information. Your name or any identifying data will not be included in our final report. You can decide at any point during this conversation to not answer a question or to have your responses not recorded.

1. Where are you from?

2. How long have you been staying at Association Jannat?

3. What has been the best part about staying at AJ?

4. What was your initial impression of Association Jannat?

5. What are your impressions now? Have they changed?

6. Is there anything that you would like to see at Association Jannat that it does not currently have to make your stay better or more comfortable?

Additional questions may be asked during the conversation if they are relevant to what is being discussed.

Appendix E: Database Software Evaluation Results

Created By: Claire Sellen

Date Created: December 14, 2018

Each database was evaluated based on perceived ease of use, quality and accessibility of tutorials, database security, data storage limit and web/mobile app integration.

Microsoft Access

- SQL

- Requires Microsoft office license, additional storage can be purchased

- Pre-existing templates to create databases

- Books, online tutorials, videos and courses on Access are available in French and Arabic.

- Access has removed user level security on web apps and new file formats

- 2 gigabyte data storage limit

- No longer offers built in software to create web app, there are external applications to convert the database into a web or mobile app

Notes: Unavailable without Microsoft Office. Easy to use interface allows inexperienced users to create basic databases, more advanced features can be added using SQL or VBA.

Microsoft SQL Express:

- SQL

- Additional storage and improved service can be purchased

- No pre-existing templates but there are step by step tutorials for creating a database

- Extensive tutorials and online support forums

- Able to grant permission based on roles, password protected, multiple security levels

- 10 gigabyte data storage limit

- Built in software for web app integration

Notes: Requires knowledge of SQL coding to create proper database. Server based solution that can be accessed on multiple computers at once.

MongoDB:

- NonSQL

- Additional storage and improved service can be purchased

- Tutorials are long videos, unable to create documents in software, must upload them to server

- Includes 30 days free online support, video tutorials are available online for free.

- Features multi level user security

- Data storage limit unknown

- Web app integration requires separate software and some additional coding

Notes: Server based solution that can be accessed on multiple computers at once, requires knowledge of C++

CouchDB:

- NonSQL

- Additional storage and improved service can be purchased

- Unable to find tutorials or videos or successfully run the program

- Text tutorials available on website and through third party sources

- Features multi level user security

- Data storage limit unknown

- Web app integration requires separate software and some additional coding

Notes: Best suited for Big Data, able to program in multiple languages such as Java, Python and C++

Appendix F: Database Creation Timeline

Written By: Nathan Ouellet, Claire Sellen

The following is a summary of the notes and modifications we made each time we visited Association Jannat.

Date	Modification
January 9, 2019	Initial visit to Association Jannat: ● Translated patient intake forms from Arabic to English. ● Informal interview with Ms. Ibtisam Ouayashn about her role at Association Jannat.
January 14, 2019	Conducted informal interviews with Mr. Sassioui and Ms. Ouayashn about their needs for the database. Presented initial prototype to Mr. Sassioui and Ms. Ouayashn, their feedback is listed below: ● Add photo into access ● patients; patients fields ● Include table with women who accompany patients ● Registry for donors: with date, monetary amount, other donations. Make sure that we can add more medication when acquired ● Registry for employees: date started, date ended, occupation ● Add button for printing files to archive ● Make it easier to add dates of patient stay ● Make drop down menus: hospitals, type of cancer, marital status, number of children, etc.
January 18, 2019	Conducted formal interviews with the employees. Feedback from Mr. Sassioui and Ms. Ouayashn listed below: ● Create a separate companion form ● Need multiple data entries for medications ● Fix date of stay format. Calculate field for durations of stay in days ● Conduct query: ex. Duration of stay

January 31, 2019	Feedback from Mr. Sassioui and Ms. Ouayashn listed below: ● Medical inventory: create form to add medication duration (name, quantity, dosage, expirations date, uses) ● Automatically update quantity
February 1, 2019	Feedback from Mr. Sassioui and Ms. Ouayashn listed below: ● Make an notification system that that alerts users when a medication is used and when it is depleted (1-2 months prior to expiration) ● We need to write out, individually, the days that each patient is present at the association. ● Include report of women who use each medication and then adjust the stock accordingly (automated updates) ● Create table for family information ● Allow "fiche des resignements" to be printed on one page ● Access fields only need to be in french
February 11, 2019	Installed prototype database at Association Jannat, created shared network folder so that database can be accessed on multiple computers. Feedback from Mr. Sassioui and Ms. Ouayashn listed below: ● Medication auto updates ● Expiration alerts ● Show how to format report ● **Interested in video explanations**

Appendix G: Final Database Prototype Screenshots

Figure G.1: The Patient Intake Form has the same fields, in the same order as the original form used by Association Jannat. Information has been removed to preserve patient privacy.

Figure G.2: Continuation of Patient Intake Form.

Figure G.3: The main menu of the database allows the user to navigate between the Patient Intake form, Patient Arrivals form (shown), the Donations form and the Medication Inventory form.

Figure G.4: The patient information table, which contains all the patients from the association. Information has been removed to preserve patient privacy.

Figure G.5: Medication Inventory table with the name, quantity, common uses, other names, dosage and expiration date of each medication. The checkbox indicates whether the medication is commonly used by the association.

Nom	Prenom	Carte Nationale	Horaires	Titre
				President de l'Association
				Tresorier
				le secretaire general
				Consultant 1
				Consultant 2
			9h 17h	Aide cuisiniere
			9h 17h	Aide avec la societe
			17h 23h	Aide cuisiniere
			9h 17h	Aide cuisiniere
			Continue	Ecrivan
			Continue	Assistance sociale
			Matin	Femme de menage
			Du lundi au ven(	Conducteur

Figure G.6: The employee table contains the hours worked and their title at the association. Information has been removed to preserve patient privacy.

Appendix H: English Version of Patient Intake Form

The following is a list of informational fields from the Patient Intake Form and Entry Sheet translated from Arabic to English in a similar display and order.

File Number:

Name (first and last):

National ID number:

Date of birth:

Address:

Hospital

Address of Hospital:

Medical card number:

Type of cancer:

Occupation:

Title

Family Status:

Married	Divorced	Widowed	Single	number of children

Health Insurance:

Yes   No   Type of health Insurance

Family beneficiary information:

Full name	National Card number	Phone number	Notes
Father:			
Sons:			

Companion information: (information about escort)

Full name:

National ID number:

Phone number:

Notes:

File number:

Monthly Patient Sheet

Full name:

Date of entry:

Source: (how they heard about AJ)

Date and place of birth:

National ID number

Medical card number (insurance?)

Hospital:

Type of cancer:

Father:

Mother:

Family Status:

Health Status:

Social Status:

Precedents:

Properties:

Approval from Secretary General:

Other Files that the association uses but we did not translate included:

Hospital Intake Form:

Copies of National ID card:

Appendix I: Responses from Initial Employee Interviews

Interview 1: Mr. Sassioui (Secretary General of the association)

1. What is your role at Association Jannat:

    a. Secretary General

    b. He controls everything going on in Association

      c. Doesn't deal with government, mostly journalists and donors

      d. Dispenses medication

2. How long have you worked here? Started work April 3rd, 2016

3. What like most about working: He likes helping patients that need help

4. What part of your position requires that you work with the patient files?

      a. EX: Journalist asked for woman with breast cancer to be interviewed

      b. EX: to motivate donors, they give statistics

5. How often do you need to access patient files? Verifies files every month on internet before they are printed and added to archive

6. What information do you most frequently look for within the files?

      a. Cities

      b. Types of cancer (make a sample report on cancer types)

      c. People who come to association don't have insurance or healthcare, so poor, asks for this info on files to verify if they really need it

7. How common for Moroccans to have health insurance: Most people who work for gov't, army, private sectors have insurance

      a. Students get free insurance

      b. Patients with private insurance are not as common, patients w/free insurance are most common

      c. Doesn't ask if rich or not

8. Can you explain the process for recording/finding information that you need: Finds patient's name and national ID on computer if from current month, if from past month or longer is in physical patient book

      a. They print out the past months with this information into patient book

            i. Asks for administrative assistant (Ms. El Qorti) to bring him information for specific patient, if not goes himself to paper files in archives

            ii. Information divided by month and year in archives

9. Would it be useful to have hard copies of patient files?

      a. Would like archives of paper files to show people, database for daily use

      b. Do you have an archive for donors too?- Yes

      c. Do not report NGOs to government, Mohammed: was only a law made after 9/11

            i. Mohammed: But if asked about it, they will report it

10. Should we put archival data into the database? Just for the new women, not the existing patients

11. Do you have any questions? - wants results before he asks questions, Wishes us success

Interview 2: Khadija El Quarti

1. Why Association Jannat: Muslims believe there is a life after death, believe paradise or hell, do this work to go to paradise (Jannat)

2. She is illiterate, president of association, Mr. Sassioui helps her

3. What are your daily activities/responsibilities as president?

    a. Has authority to pay people,

    b. if official visit, she is responsible

    c. representative for official meetings and outside work

4. What is the role of your brother? (Sahl El Quarti)

    a. Responsible for finances as Treasurer,

    b. deals with donors

    c. retired but working here, repairman

    d. Two signatures for checks (her and her brother)

5. Nothing we can put into our database to help Khadija b/c illiterate

Interview 3: Saida El Qorti

1. Worked here since 2014

2. What do you enjoy about working here? She is happy because she helps someone else

3. What is your role at AJ: Secretary

    a. Receives the patients first

    b. Records initial information (she writes down the information)

4. Does she need to access other files?

    a. Sometimes, if a patient comes after 2 years and wants to know if she was in association before

5. Does she ever need to change existing files: Would update general info like phone number, location or type of cancer

6. Can you demonstrate the process for receiving a new patient:

    a. Usually has social discussion (informal) with them before fill out form

    b. Tell them "we are your family" and comforts new women

    c. Whether she is happy or not, can quickly start files, if not, tries to find out main problem before filling out files

        i. Ex: asked new patient if she wanted to get breakfast. When patient heard, patient cried b/c can't afford cancer detection/treatment

        ii. Tells her that she can find donors to help her

    d. Houses are for the rich, so this house is daunting, need social coaching, welcoming, know given help

    e. The form has a lot of fields, most are from carte nationale but phone #, marital status/kids have to be asked

    f. Forms have medical situations because patients usually come here after they have been at the hospital

    g. Based on type of insurance listed, know economic status

    h. For poor people, association tries to cover everything, more attention

7. For information not found in the patient book, needs to go to archives for it upstairs

8. What would be helpful for you to access patient files? No problem with her job, nothing needed to be made easier (we can ask her once we have a prototype

    a. She wants something that can make her job easier, but doesn't know how

        i. Simplify everything

Interview 4: Ibtissam Ouayashn (change in translator, Yousarra)

1. Role: case tracking, updates them, social assistant, follows cases, helps them if they need kitchen help (multifaceted job)

2. She is Khadija's niece, has worked here since the beginning of the association

    a. She officially started working here after graduation (degree in clinical psychology, thesis on breast cancer), volunteered here before hand

3. She likes the humanitarian aspect more than the technical aspect, it is satisfying to make these women happy

4. Does your position require that you work with the files; Social assistant: in order to know for each case what social background she has she relies on the files (type of insurance gives social class)

5. How often do you need to access patient files: Depends on number of cases, if there are many patients each day she cannot follow all of them in one day

6. How does she follow them?

    a. There are two cases, some women here have physical problems that cause psychological problems or psychological problems cause physical problems

    b. Gets to know patients to see how she can help them

    c. Two important information: if the patient accepts that she is sick and accepts that she needs physical help or if she is in shock and unwilling to admit that they have cancer

    d. What does she do when a patient is in denials?

        i. Since we are muslims we believe that if you are sick it is your destiny, you cannot escape from it.

        ii. When the women arrive it helps them improve by meeting other female patients

7. Any other information she uses from her files to do her job?

    a. The files do not directly help her to solve patient problems, but they are useful for journalists when they want to interview patients (they have specific conditions, she helps narrow the type of patients that can be interviewed)

    b. Teach her how to make queries so that she can search for specific conditions!

        i. EX: Pilgrimage to mecca - for women who are older than 45 years old they do not need a man

        ii. Should include DOB on database

8. Anything useful for her that we can help with?

    a. She does not have too much difficulty in her job, she hopes the application will be easy to use (add another layer of usefulness)

Appendix J: User Manual in English and French

English Manual

VIDEO 1: How to run a query:

1. From the create tab, click "query design".

2. Select the tables that you wish to include in the query.

    a. For this example, we will use information des bénéficiaires and arrivées des bénéficiaires.

3. Select the fields you wish to include in the query.

    a. Numéro de dossier

    b. Nom

    c. Numéro national

    d. Ville

    e. Type de cancer

    f. Des jours

    g. Le mois

    h. L'annee

4. If you click run you will see the information.

    a. There are different ways to display this information.

    b. Double click on the line between tables to change the way the information is. displayed - we will chose option 2 for now.

5. Click run again, you can see how the information included has changed.

To filter information within query:

6. Example: we want to show everyone with breast cancer who was here in January.

7. Type Comme "*sein*" in the criteria field for cancer.

8. Type "janvier" in the criteria field for le mois.

9. Click execute.

VIDEO 2: To run statistics in Excel (good for numbers of people).

1. Clear criteria.

2. In the external data tab, click excel.

3. Click the first two check boxes to export data and open the file.

   a. Make sure to save the file to the base de donnees folder on the desktop so that it can be accessed on the other computer!

4. In a new column, type the statistic you are calculating (this is for organization purposes only).

5. Go to the formulas tab, then click more formulas, then statistical.

   a. First we will use the "NB.SI" function to count the number of patients with cancer du sein.

   b. Range: Click the cancer column.

   c. Criteria: Click the cancer du sein field (or type "*sein*").

   d. Click ok to save the number in the cell.

6. Next we will count the number of people with breast cancer who are from Tetouan.

   a. Formulas -> more formulas -> statistical -> "NB.SI.ENS".

   b. Criteria 1: Cancer, cancer du sein.

   c. Criteria 2: Ville, Tetouan.

   d. Click "OK".

7. We can run "NB.SI.ENS" with more than 2 fields.

   a. Criteria 1: cancer du sein.

   b. Criteria 2: Ville, tetouan.

   c. Criteria 3: consiele, patient precedent.

VIDEO 3: Creating/Formatting report:

1. Let's go to the query that we just created.

2. And for criteria, let's sort it by January 2017.

3. Click Run.

4. Go to Create, Report Wizard.

5. Chose the fields you want to include.

6. Chose the way you want data organized in the table, I chose the second option because it displays patient data all in one row.

7. Sort it by numéro de dossier, croissant.

8. Tabular, landscape.

9. Check the fit to page box even though we're gonna have to fix it.

10. Check the second option, modify the report's design.

11. As you can see some of the fields are cut off from the page.

12. We can use design view to fix the page layout so everything appears on one page.

13. Hold the shift key to select multiple boxes at once or change the size simultaneously.

VIDEO 4: Modifying patient information in table/form:

1. In order to modify patient information in the fiche de renseignements we need to add a search function.

2. Click on the form, go to design view.

3. From the design tab, click on the "button" and draw a box at the bottom of the page.

4. A menu will appear to choose the function of the button. From the record navigation menu, click find record.

5. You can add text or an image to the button, I am going to use a magnifying glass for the button label.

6. You don't need to change the name of the function, but I'm going to change it to something that explains what it does.

7. Go back to the form view, and your button should be visible in the footer (or wherever you put it).

8. Click the numéro de dossier field.

9. To search for a record, click on the button and type in the patient file number.

10. Make sure to look in "current field" and match "whole field".

11. To search for something other than the file number, click that field in the file and then click search.

12. Once you have found the desired file, you can modify the information within the form by typing it in.

To modify information in tables:

1. Open the table you want to edit information in.

2. Click the find button within the home tab.

3. Type the information you want to find (ex: file number, name, national ID number, etc).

    a. Make sure to look in current document this time.

    b. Can match whole field or part of a field.

    c. EX: if I select "any part of field" and then type in part of the information, it will find all instances of it (type 3, then it will find every instance of 3).

4. Make sure to save the table by clicking the same button (upper left corner) or using control + S on the keyboard.

VIDEO 5: Medication table:

1. Inventaire des medicaments table is designed to keep track of all the medication you have in stock.

    a. Fields: name of medication, quantity, common uses, other names, whether or not it is commonly used by the association, the recommended dosage and the expiration date.

2. In order to update the quantity of the medication you will have to add them manually.

3. To see when medications are near their expiration date, you can either sort the medications by date in the table or run a query.

    a. Click on arrow in date d'expiration field, Sort oldest to newest or newest to oldest

4. Query: new query, select inventaire des medicaments.

    a. There are multiple functions you can use to filter expiration dates.

    b. Use <Date() to find all the medications that expired before today's date.

    c. OR use: <#dd/mm/yyyy# to find expiration date before given date.

    d. Use Between #dd/mm/yyyy# and #dd/mm/yyyy# to filter for dates between a given range.

        i. French: entre et

        ii. You must surround the date with # symbols, otherwise access will not recognize it as a date.

French Manual

VIDEO 1: Comment exécuter une requête:

1. Dans l'onglet Créer, cliquez sur «Création de requête».

2. Sélectionnez les tables que vous souhaitez inclure dans la requête

    a. Pour cet exemple, nous utiliserons les informations des bénéficiaires et des arrivées des bénéficiaires.

3. Sélectionnez les champs que vous souhaitez inclure dans la requête

    a. Numéro de dossier

b. Nom

c. Numéro national

d. Ville

e. Type de cancer

f. Des jours

g. Le mois

h. L'année

4. Si vous cliquez sur Exécuter, vous verrez les informations

   a. Il y a différentes façons d'afficher cette information

   b. Double-cliquez sur la ligne entre les tables pour modifier l'affichage des informations. Nous choisirons l'option 2 pour l'instant.

5. Cliquez sur Exécuter, vous pouvez voir comment les informations incluses ont changé

Pour filtrer les informations dans la requête:

6. Exemple: nous voulons montrer à toutes les personnes atteintes du cancer du sein qui étaient ici en janvier

7. Tapez Comme "*sein*" dans le champ de critères du cancer

   a. il est important d'inclure le symbole étoile avant et après le mot

8. Tapez "janvier" dans le champ de critères pour le mois

9. Cliquez sur exécuter

10. Maintenant, vous verrez une liste de personnes qui répondent à ces critères. Dans la vidéo suivante, je vais expliquer comment créer des statistiques avec les données du patient.

VIDEO 2: Pour exécuter des statistiques dans Excel (bon pour le nombre de personnes)

11. Supprimez les Critères

12. Dans l'onglet Données externes, mmcliquez sur Excel.

13. Cliquez sur les deux premières cases à cocher pour exporter les données et ouvrir le fichier.

   a. Veillez à enregistrer le fichier dans le dossier base de données sur le bureau pour pouvoir y accéder sur l'autre ordinateur!

14. Dans une nouvelle colonne, tapez la statistique que vous calculez (ceci est uniquement à des fins d'organisation)

15. Accédez à l'onglet Formules, puis cliquez sur d'autres formules, puis sur Statistiques.

a. Nous allons d'abord utiliser la fonction «NB.SI» pour compter le nombre de patients atteints d'un cancer du sein

b. Gamme: Cliquez sur la colonne du cancer

c. Critères: Cliquez sur le champ cancer du sein (ou tapez «* sein *»)

d. Cliquez sur ok pour enregistrer le numéro dans la cellule.

16. Ensuite, nous compterons le nombre de personnes atteintes du cancer du sein et originaires de Tétouan.

a. Formules -> plus de formules -> statistiques -> "NB.SI.ENS"

b. Critère 1: Cancer, cancer du sein

c. Critère 2: Ville, Tétouan

d. Cliquez sur OK"

17. Nous pouvons exécuter "NB.SI.ENS" avec plus de 2 champs

a. Critère 1: cancer du sein

b. Critère 2: Ville, Tétouan

c. Critère 3: consensus, patient précédent

VIDEO 3: Création / formatage de l'état:

1. Allons à la requête que nous venons de créer

2. Et pour les critères, trions-les d'ici janvier 2017

3. Cliquez sur Exécuter

4. Aller à Créer, Assistant de l'état

5. Choisissez les champs que vous souhaitez inclure

6. Choisissez la façon dont vous voulez que les données soient organisées dans la table, j'ai choisi la deuxième option car elle affiche les données du patient sur une seule ligne.

7. Triez-le par numéro de dossier, croissant

8. Tabulaire, paysage

9. Vérifiez l'adéquation à la boîte de page même s'il va falloir la corriger

10. Cochez la deuxième option, modifiez la conception de l'état

11. Comme vous pouvez le voir, certains champs sont coupés de la page

12. Nous pouvons utiliser le mode Création pour corriger la mise en page afin que tout apparaisse sur une page.

13. Maintenez la touche Maj enfoncée pour sélectionner plusieurs boîtes à la fois ou modifier la taille simultanément

VIDEO 4: Modification des informations patient sous forme de tableau / formulaire:

1. Afin de modifier les informations des patients dans la fiche de renseignements, nous devons ajouter une fonction de recherche.

2. Cliquez sur le formulaire, allez en mode création

3. À partir de l'onglet Dessin, cliquez sur le «bouton» et tracez un cadre en bas de la page.

4. Un menu apparaît pour choisir la fonction du bouton. Dans le menu de navigation des enregistrements, cliquez sur Rechercher un enregistrement.

5. Vous pouvez ajouter du texte ou une image au bouton, je vais utiliser une loupe pour l'étiquette du bouton

6. Vous n'avez pas besoin de changer le nom de la fonction, mais je vais le changer en quelque chose qui explique ce que ça fait

7. Retournez à la vue formulaire et votre bouton devrait être visible dans le pied de page (ou où que vous le mettiez)

8. Cliquez sur le champ numéro de dossier

9. Pour rechercher un enregistrement, cliquez sur le bouton et entrez le numéro de dossier du patient.

10. Assurez-vous de regarder dans le «champ actuel» et de faire correspondre le «champ entier»

11. Pour rechercher autre chose que le numéro de fichier, cliquez sur ce champ dans le fichier, puis cliquez sur Rechercher.

12. Une fois que vous avez trouvé le fichier souhaité, vous pouvez modifier les informations dans le formulaire en le saisissant.

Pour modifier des informations dans des tableaux:

1. Ouvrez la table dans laquelle vous souhaitez modifier les informations

2. Cliquez sur le bouton Rechercher dans l'onglet Accueil.

3. Tapez les informations que vous voulez trouver (ex: numéro de fichier, nom, numéro d'identification, etc.)

4. Assurez-vous de regarder dans le document actuel cette fois

5. Peut correspondre à un champ entier ou à une partie d'un champ

6. EX: si je sélectionne "n'importe quelle partie du champ" puis saisis une partie de l'information, il en trouvera toutes les instances (tapez 3, puis toutes les instances de 3)

7. Assurez-vous de sauvegarder la table en cliquant sur le même bouton (coin supérieur gauche) ou en utilisant les touches Ctrl + S du clavier.

VIDEO 5: Table de médication:

1. Le tableau inventaire des médicaments est conçu pour garder une trace de tous les médicaments que vous avez en stock

   a. Champs: nom du médicament, quantité, utilisations courantes, autres noms, communément utilisé par l'association, dosage recommandé et la date d'expiration

2. Afin de mettre à jour la quantité de médicament, vous devrez les ajouter manuellement.

3. Pour voir quand les médicaments approchent de leur date d'expiration, vous pouvez trier les médicaments par date dans la table ou exécuter une requête.

   a. Cliquez sur la flèche dans le champ de la date d'expiration, Triez le plus ancien au plus récent ou le plus récent au plus ancien.

4. Requête: nouvelle requête, sélectionnez inventaire des médicaments

   a. Vous pouvez utiliser plusieurs fonctions pour filtrer les dates d'expiration.

   b. Utilisez <Date () pour rechercher tous les médicaments expirés avant la date du jour.

   c. OU utilisez: <# jj / mm / aaaa # pour trouver la date d'expiration avant la date donnée

   d. Utilisez entre # jj / mm / aaaa # et # jj / mm / aaaa # pour filtrer les dates comprises entre une plage donnée

   e. Vous devez entourer la date avec des symboles #, sinon l'accès ne la reconnaîtra pas comme une date.

* is called étoile , # is le carré or dièse

Appendix K: Definitions of Key Terms in English and French

English:

<u>Tutorial Vocabulary</u>

1. **Primary Key -** One or more fields (columns) whose values uniquely identify each record in a table. A primary key can not allow null values and must always have a unique index. A primary key is used to associate a table with foreign keys in other tables.

2. **Criteria -** A rule that displays filtered data. For example, the user may create criteria that asks to input specific dates.

3. **Field -** A piece of information related to a single person or thing. For example, "File number" and "Last name" are fields. Are displayed in columns.

4. **Form -** A tool you can use to create an easier and more user-friendly way to input data into a table.

5. **Infographic -** A representation of information displayed in a graphical format, so that it is easier to understand and analyze

6. **Input Mask -** Format consisting of literal display characters (such as parentheses, periods, and hyphens) and mask characters specifying where data should be entered, and the type of data and number of characters allowed.

7. **Parameter -** A variable that is given by the user to execute criteria. For example, the user can create a parameter of displaying information only from 1/2/2019 to 1/3/2019. This parameter would fulfil criteria that asks for the inputting specific dates.

8. **Query -** A structured method of asking a set of structured data to produce only those fields from a record that answer a question.

   - example, you may want to know how many patients have a specified diagnosis. This query can produce just those fields without any identifying information for the patient.

   a. **Select Query** - a data retrieval query. It enables the extraction of data from a database that can then be used to create a visual.

   b. **Parameter Query** - a query that can be updated easily to reflect a new search term.

9. **Record -** A database entry stored within a table, located in the rows section of the table

10. **Relationship -** Association established between common fields (columns) of two tables. A relationship can be one to one, one to many, or many to many.

    a. one-to-one relationship: An association between two tables in which the primary key value of each record in the primary table is the value of the corresponding field or fields of a record and a single record in the associated table.

b. one-to-many relationship: An association between two tables in which the primary key value of each record in the primary table matches the value of the corresponding field (s) in many records in the associated table.

c. many to many: An association between two tables in which a record from either table can be associated with multiple records in the other table. To establish a many-to-many relationship, create a third table and add the primary key fields from the other two tables to this table.

11. **Report -** A tool that is used to display and print data in an organized way.

12. **Table -** A way to store data about a particular subject. Contains records (rows) and fields (columns).

French:

Tutorial Vocabulary

1. **Clé primaire** - Un ou plusieurs champs (colonnes) dont les valeurs identifient de manière unique chaque enregistrement d'une table. Une clé primaire ne peut pas autoriser les valeurs Null et doit toujours avoir un index unique. Une clé primaire est utilisée pour associer une table à des clés étrangères dans d'autres tables.

2. **Critères -** Une règle qui affiche les données filtrées. Par exemple, l'utilisateur peut créer des critères qui demandent de saisir des dates spécifiques.

3. **Champ** - Une information liée à une seule personne ou chose. Par exemple, "Numéro de fichier" et "Nom" sont des champs. Sont affichés en colonnes.

4. **Formulaire** - Objet de base de données Access sur lequel vous placez des contrôles permettant d'effectuer des actions ou de saisir, afficher et modifier des données dans des champs.

5. **Infographie** - Représentation de l'information affichée dans un format graphique, facilitant la compréhension et l'analyse.

6. **Masque de saisie** - Format composé de caractères d'affichage littéraux (tels que des parenthèses, des points et des traits d'union) et des caractères de masque spécifiant où les données doivent être entrées, ainsi que le type de données et le nombre de caractères autorisés.

7. **Paramètre** - Une variable qui est donnée par l'utilisateur pour exécuter les critères. Par exemple, l'utilisateur peut créer un paramètre d'affichage des informations uniquement du 2/1/2019 au 3/1/2019. Ce paramètre satisferait aux critères qui demandent la saisie de dates spécifiques.

8. **Requête -** Une question sur les données stockées dans vos tables ou une demande d'exécution d'une action sur les données. Une requête peut rassembler des données provenant de plusieurs tables pour servir de source de données pour un formulaire ou un rapport.

- Par exemple, vous voudrez peut-être savoir combien de patients ont un diagnostic spécifique. Une requête peut produire uniquement ces champs sans aucune information d'identification pour le patient.

  a. **Requête de Sélectionner** - Requête qui pose une question sur les données stockées dans vos tables et renvoie un jeu de résultats sous la forme d'une feuille de données, sans modifier les données.

  b. **Requête de Paramètre -** requête dans laquelle un utilisateur spécifie de manière interactive une ou plusieurs valeurs de critères

  c. **Requête de totaux** - Requête qui affiche un calcul récapitulatif, tel qu'une moyenne ou une somme, pour les valeurs de divers champs d'une table ou de plusieurs tables.

9. **Record -** Une entrée de base de données stockée dans une table, située dans la section des lignes de la table

10. **Relation -** Association établie entre des champs communs (colonnes) de deux tables. Une relation peut être un à un, un à plusieurs ou plusieurs à plusieurs.

    a. relation un à un: Association entre deux tables dans laquelle la valeur de clé primaire de chaque enregistrement de la table primaire correspond à la valeur du ou des champs correspondants d'un enregistrement et d'un seul enregistrement de la table associée.

    b. relation un à plusieurs: Association entre deux tables dans laquelle la valeur de clé primaire de chaque enregistrement de la table primaire correspond à la valeur du ou des champs correspondants de nombreux enregistrements de la table associée.

    c. plusieurs à plusieurs: Association entre deux tables dans laquelle un enregistrement de l'une ou l'autre table peut être associé à plusieurs enregistrements de l'autre table. Pour établir une relation plusieurs à plusieurs, créez une troisième table et ajoutez les champs de clé primaire des deux autres tables à cette table.

11. **État-** Un outil utilisé pour afficher et imprimer les données de manière organisée.

12. **Table -** Un objet de base de données qui stocke des données dans des enregistrements (lignes) et des champs (colonnes)

Appendix L: Links to Video Tutorials

Videos Tutorials made by Claire Sellen:

https://www.youtube.com/playlist?list=PLekxat4UXc0RPEX850djP9gvloL1czvIV

Playlist of Video Tutorials collected by Claire Sellen:
https://www.youtube.com/playlist?list=PLekxat4UXc0Qvzg3npYLJIOYnzoltxDgH

Appendix M: Responses from Employee Database Satisfaction Interviews

Ms. Ouayashn

1. She wants the big titles in the manual to be written in French and Arabic because the system is in French. For example, the word query

    a. Inputting patient data with form: 5

    b. Patient data with table: 3, needs to practice more

    c. Modifying data with form: 5

    d. Modifying data using table: 3

    e. Printing patient form: 5

    f. Adding companion information: 5

    g. Running query: 1, doesn't know how to use it, because the titles haven't been translated to French, looked at instructions and didn't know how to use them

    h. Generating report: She wants further instruction on how to do it

    i. Generating statistics: She said that there's not a part in the manual for teaching how to use statistics

        i. 3 because of the difficulties with the report and statistics

2. Accomplished: Inputting patient data in the form, and the caregivers

3. Confusing parts of manual: Just wants all the big titles to be translated to French

4. Database expectations: 4, helped them a lot except for the report and statistics

5. Skipped 7

6. Any features to change/add: No, the database provided everything they needed

Mr. Sassioui

1. Wants to know more about problem with statistics and whether they need to make everything in the database French

a. Patient data form: 5

b. Patient table: The form is easier than the table, 4

c. Modifying info on form: Doesn't know how, wants to be shown again

d. Modifying info on table: Doesn't know how, wants to be shown again

e. Printing form: 5

f. Adding companion: 5

g. Queries: Doesn't know how, confused wants to be shown how

h. Generating report: 5

i. Generating stats: He is able, 4

2. He wants the manual to be translated to French.

3. Hard for him to use the manual written in Arabic, all the tasks were done without the manual

4. Skipped questions about manual

5. Satisfaction: not everything, score: 4, for example medications, he wants to know how to input the quantity of medications, and for the graphs. It's not easy to find statistics in the system, he wants a video tutorial for how to make statistics.

6. Except for statistics and graphs, the system is really easy to use and helpful.

Appendix N: Responses From Lalla Salma Foundation Interview

Answers to the Lalla Salma Foundation interview questions; supplementary information gained when visiting.

Date of Interview: February 20, 2019

Interviewee: Brahim Adnane

General Information about The Lalla Salma Foundation:

House of Life Location: Casablanca, Morocco

Founded: 2007

Capacity at House of Life (adult): 40 patients (20 rooms; 2 beds/room; men and women stay in separate rooms; If adult house is full, they start filling children house).

Female to Male Ratio: 69 : 31

Number of Houses of Life in Casablanca: 2 (one for adults and one for children).

Staff:

- Secretary (responsible for administrative tasks/creates statistics manually)
- Bus Driver
- Janitor (takes care of organizing house)
- Nurses (5)
- Multidisciplinary Doctors
- Brahim Adnane (director of adult and children Houses of Life in Casablanca)

First Lalla Salma Foundation Location: Beni-Mellal, Morocco

Cost: each patient has to pay 15 dirhams and each caregiver has to pay 15 dirhams (not all patients have caregivers).

Duration of Accommodation: one day - two months

Scope: They receive patients from all of Africa.

Occupancy rate: 60 to 92% each month

Services they provide:

- The patients can benefit from a makeup artist/aesthetician, chiropractor, teachers (learn to read Quran), free transportation to treatment centers (twice daily; during emergencies), in house nurses (at least one nurse is present at all times; total 5 nurses), multidisciplinary doctors.

- They work in partnerships with other organizations to organize activities for the patients (includes cultural and spiritual songs/activities; ~15 annually).

Services they do not provide:

- Meals: in children home they have a madame who prepares meals every Sunday.

  - She wanted to organize meals at the adult House of Life, but the caregivers did not want to help prepare the meals (because they are afraid of others judging their food/cooking abilities).

  - It's also hard to cook for so many patients.

- Medications: provided by doctors at each hospital.

Database Information:

- History:

  - Started entering patient data in system from 2012 May.

  - They still use the paper files.

- Those who work with database information:

  - Brahim Adnane manages the database (he controls the data access and input of both the adult and children Houses of Life).

  - The secretary creates the statistics (she makes the statistics manually because the database does not work).

- Type of Data that Mr. Adnane Inputs:

  - Patient Information (includes caregiver/companion information): If a patient has stayed at the House of Life previously, their name will show up in a drop down menu.

  - Hospital Information: doctor's name, medication, treatment, hospital/treatment center name.

  - Activity/Outing Information: what is the nature of the outing, who is sponsoring it, how many women are going, what is the duration, where is the activity taking place.

- General Database Information:

- ○ The system was created in 2012.

- ○ 4 engineers created the database (the Lalla Salma Foundation has not maintained contact with these engineers.

- ○ They have had some problems with generating reports/statistics on the database.

- ○ Most frequently accessed information: name, National ID, file number, birth date, the doctor, treatment, name of treatment center, their address.

- ○ When they receive new patient, they click "admission" to enter a new patient".

- ○ Whenever they add a new patient, it automatically shows up with today's date (can be changed manually).

- Duration of Accomodation:

  - ○ Included in the basic patient information table.

  - ○ Their doctor is responsible for writing the departure date.

  - ○ When he (Brahim Adnane) enters a specific date, only the patients that were their on that date will show up.

- Caregiver Information: (for those who stay at the House of Life)

  - ○ They record their address and phone number.

  - ○ If the caregiver is not family, they have to purchase "commitment insurance".

  - ○ they enter National ID number and the patient's file number.

- Funds Management:

  - ○ Based on the patient information they put in the database (for example, duration of stay), they get a price for the patient per night.

  - ○ The minus in the credit table means that the patient no longer benefit from the shelter.

  - ○ They gather all their funds in one bank account.

  - ○ They record urgent needs for something for the association and it gives them a price for that thing.

  - ○ If he (Brahim Adnane) needs to get money, they go to a treasury to get the money.

  - ○ At the end of the year, they generate a report with how much the Lalla Salma Foundation has to pay each of the organizations/businesses they partner with (gardening, cleaning, etc.).

  - ○ They track donations: each donor gets an ID number and they record what was donated and when (each donor is offered a receipt).

Appendix O: Responses from Patient Interviews

Patient Testimonials and Feedback

Patient 1:

1. Where are you from?

    a. Khemisset, Morocco

2. How long have you been staying at Association Jannat?

    a. 10 years. Moved back and forth home. Would stay for 10 or 20 days at a time. Had 9 years of treatment, last year only had check up for signs of more cancer.

3. What was your initial impression of Association Jannat?

    a. Heard from a woman about Association Jannat after she couldn't stay at the hospital because of the cost per night. Offered extra activities to see areas around Fes and other trips.

4. Do you like being around all the other women?

    a. Yes, a lot.

5. What are your impressions now? Have they changed?

    a. Likes it because they helped marry her daughter. Daughter worked here as a secretary at AJ (not Ibtissam). Her husband is a donor. Association helped out with wedding. Feels like she progressed through the activities offered: no longer sick, got to go on the Hajj.

6. What has been the best part about staying at AJ?

    a. Everything.

7.   Is there anything that you would like to see at Association Jannat that it does not currently have?

    a. Would change nothing, everything is here. So many problems solved (sickness gone, have friends, daughter is married, went on the Hajj).

Patient 2:

1. Where are you from?

    a. Kenitra

2. How long have you stayed here

    a. 3 years, visiting when she has appointments

3. What is the best part about staying at AJ

    a. Everything is the best

      b. Even her family cannot offer what they offer here

4. What was your initial impression?

      a. At the beginning when she learned she has sick all the questions came into her head (where to stay, where to eat) first impression was that association would solve her problems

      b. To rent/transport and paying medicine and doctors is a whole budget not affordable

5. Have your impressions changed?

      a. Right now it is like when you meet with people and find that their problems are worse your own problems become smaller

      b. Did she find strength/support - yes

6. Is there anything that you would like to see

      a. The association doesn't always have donors to help for MRIs/scans, sometimes they have to pay out of pocket

      b. MRI is $600 every month, scan is $100 a month, everything is expensive, Association cannot always cover everything for every woman

      c. Every 3 months she has scans, ~$400 (her family helps her pay)

      d. Rahmed insurance helps pay for services (reimbursement)

      e. For someone who doesn't work/is poor the treatments are very expensive

7. How did you hear about the association?

      a. While she was getting chemo she met another woman who told her about the association

      b. There is another association that charges 30 dh a night, don't offer the same services (Lalla Salma Foundation) She did not stay at the association, but some women have been there to get free medicine

8. She is doing check ups every 4 months, sickness lasts all your life

Patient 3:

1. Where are you from?

A small city next to Tangier

2. How long have you been staying at Association Jannat?

She has been at the association for one year. She heard about it when she was staying at Lalla Salma foundation where she was paying 30 MAD a night and she heard about the association. She was staying there for a month next to the hospital at the Lalla Salma Foundation. Her sons had to split all of the charges between because they do not have a lot of money. She began to cry.

3. What was your initial impression of Association Jannat?

Good, Comfortable

4. What are your impressions now? Have they changed?

She has had the same impression all throughout her stay at the association. She continues to feel well at the association

5. What has been the best part about staying at AJ?

Sleeping, hot water, eating, hospitality, she thanks God. She doesn't want anything else at the association because everything that she needs is at the association. She has made many friends at the association and has gone on trips with the women at AJ, she has been on four trips with them. Her favorite trip was one where she went to another location in Rabat with the women at AJ. She doesn't know exactly where because she is from Tangier. They have little celebrations where they all drink tea and enjoy each other's company.

Patient 4:

1. Where are you from?

   a. Kenitra

2. How long have you been staying at AJ?

   a. 3 years, right now. Not consecutively, it depends on when she has to meet with the doctor.

   b. In the beginning, when they meet with the doctor, they stay for three days. First day for analysis, second one for a scanner/ecography, and the third day they take the results to the doctor.

   c. She has breast cancer but it spreads to other parts of her body

3. What has been the best part about staying at AJ?

   a. When you get back from the doctor and you find where to stay, because she was staying at another association but they told her that she lived close enough that she couldn't stay there.

   b. The other organization is called "noseba"? And is in G5 also

   c. Once the other organization got full they only allow those who are from far away to stay

   d. But she says that a patient is a patient

   e. Her cancer started in 2014, and in 2016 she moved to AJ

4. What was your initial impression of Association Jannat?

    a. At first she had a negative impression, because she was used to being able to stay in her own room, and here the beds are all together. Now she lives in the other apartment, where theres only 4 people living. There's rooms with smaller amounts of patients. She needs air, doesn't want to stay with everyone. Because of her cancer she can't stay in places with a lot of people or take public transportation.

5. What are your impressions now? Have they changed?

    a. The apartment solved this problem. She likes staying here to communicate with others.

6. Is there anything else you'd like to see at AJ that isn't here currently?

    a. Everything is here.

7. How did you hear about AJ?

    a. Its known, from news papers and

8. Have you made any friends here that you've kept in contact with

    a. Yes, a lot of them. More comfortable here than her family.

9. What would you do if there was no AJ?

    a. This is the only option

Patient 5:

1. Where are you from?

Tangier

2. How long have you been staying at Association Jannat?

She has been here for 10 days.

3. What was your initial impression of Association Jannat?

Perfect, unlike her home which was not perfect.

4. How did you hear about Association Jannat?

She came to the hospital and met with a patient that has the same thing and she told her about this Association.

5. What are your impressions now? Have they changed?

She talks about how she feels rather than what her impressions are. She is very happy. She doesn't feel that she is sick at all.

6. What has been the best part about staying at AJ?

Everything. Everything is beautiful. She came to the hospital to get her radiology and she met with another patient who had the same thing and then she heard about the association that way. She says that everything is here and she would not change anything about the association. She said only God knows what would have happened without the association. She has made many friends at the association.

Appendix P: Institutional Review Board Approval

WORCESTER POLYTECHNIC INSTITUTE

100 Institute Road, Worcester MA 01609 USA

Institutional Review Board
FWA #00015024 - HHS #00007374

Notification of IRB Approval

Date:	18-Jan-2019
PI:	El-Korchi, Tahar
Protocol Number:	IRB-19-0353
Protocol Title:	Improving the Organization of Association Jannat
Approved Study Personnel:	El-Korchi, Tahar~Carriero, Anna~Ouellet, Nathan~Sellen, Claire~Raine, Elizabeth~
Effective Date:	18-Jan-2019
Exemption Category:	2
Sponsor*:	

The WPI Institutional Review Board (IRB) has reviewed the materials submitted with regard to the above-mentioned protocol. We have determined that this research is exempt from further IRB review under 45 CFR § 46.101 (b) (2), which applies to

Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior, unless: (i) information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; and (ii) any disclosure of the human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation.

The study is approved indefinitely unless terminated sooner (in writing) by yourself or the WPI IRB. Amendments or changes to the research that might alter this specific approval must be submitted to the WPI IRB for review and may require a full IRB application in order for the research to continue. You are also required to report any adverse events with regard to your study subjects or their data.

Changes to the research which might affect its exempt status must be submitted to the WPI IRB for review and approval before such changes are put into practice. A full IRB application may be required in order for the research to continue.

Please contact the IRB at irb@wpi.edu if you have any questions.

*if blank, the IRB has not reviewed any funding proposal for this protocol