IOSR Journal of Computer Engineering (IOSR-JCE)
e-ISSN: 2278-0661,p-ISSN: 2278-8727, Volume 25, Issue 2, Ser. I (Mar. – Apr. 2023), PP 56-74
www.iosrjournals.org

Home Conflicts Resolution Through Family Therapy

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ABSTRACT
Family conflicts and violence cases in Kenya is on increase on daily basis. These cases emanate from disagreement among the family members who suffer silently with their personal problems due to difficulties of accessing family therapy for resolution of disputes at homes. Kenya has about 100 psychiatrists and most of them are in major cities in the country (Meyer &Ndetei, 2015). Every forty seconds, an individual commit suicide (Word Health Organization, 2019). Despite the increased vices among families, Kenya's health information system currently does not address particular conditions related to mental health and its interventions monitoring (Ministry of Health Kenya, 2020).
The research focused on developing an integrated family therapy prototype system to address timely access to family therapy by family members for conflict resolutions at homes. The prototype was quantitatively evaluated using a usability test on 143 enthusiasts' selected using systematic sampling in different areas within Nairobi. The prototype usability analysis was done, users' feedbacks collected and 87% of the users were satisfied with acceptance of the system. The results demonstrated that the prototype was effective in addressing accessibility of family therapy by family members for timely conflicts resolutions to enhance good morals and well-being in the Country.

Keywords
Family conflicts, Family therapy, Conflict resolution

Date of Submission: 10-03-2023 Date of Acceptance: 23-03-2023

I. INTRODUCTION

The number of family conflicts and violence cases in Kenya is increasing day by day. Most of these cases emanate from disagreement among the family members. Family members suffer silently with their personal problems due to difficulties of accessing family therapy for assistance. The difficulties faced by families in accessing timely family therapy for resolutions of disputes at homes has resulted in animosity and increased cases of mental illnesses among family members in the Country. The most frequent diagnosis of mental illnesses made in general hospitals include stress, depression, substance abuse and anxiety disorders. (Ndetei et al, 2008). Families residing in marginalized areas face difficulties of accessing the therapeutic services due to limited counseling centers and poverty. Marginalization is costly to both family therapy and the mental health field (Shields & McDaniel, 2007). This has led family members to take wrong actions like committing suicide, physical violence and among other serious problems in the society.

Kenya has about 100 psychiatrists and most of them are in major cities in the country (Meyer &Ndetei, 2015). The increased vices have resulted in tremendous pressure on counseling centers' staff and long therapeutic sessions due to large numbers of family members who want to make the most of their time during counseling. Family problems are painful and traumatic and are the major cause of conflicts in the country. The media report on social problems such as robbery, suicide, truancy, drug abuse, murder is on the increase on daily basis. Every forty seconds, an individual commit suicide (Word Health Organization, 2019). It is estimated that one in every 10 people suffer from a common mental disorder. Kenya being one of 28% of World Health Organization member states have no separate mental health budget, and mental health expenditure by government is 0.01% of the total expenditure (Ministry of Health Kenya, 2020).

As in other developing countries, Kenya faces many challenges in implementing ICT in family therapy and mental health such as inadequate ICT skills among professionals in mental health, ICT infrastructure challenges, economic challenges, social and political issues. The application and integration of the information

technologies into family therapy is still not fully implemented in the country despite the increased vices among families. Kenya's health information system currently does not address particular conditions related to mental health and mental health interventions monitoring (Ministry of Health Kenya, 2020). Family members face difficulties in locating and accessing timely family therapeutic services for assistance on their personal problems particularly in marginalized areas causing them to take wrong directions resulting in conflicts. This remains a limiting factor in the delivery of quality family therapy and counseling services. There is a need to integrate ICT into the traditional face-to-face counselling for the diversity in counselling delivery (Obi et al. 2012). Full integration of modern information technology and provision of clear accessibility ways for family therapy services is crucial to alleviate crisis situations faced by family members.

Strengthening families in crisis through timely family therapy provides the most natural way of dealing with many psychological problems and conflicts in the country. This enables family members to communicate emotions without fear which is the basis of healthy attachment (Bowlby, 1988 & Johnson, 2004). Incorporation of local counselors and faith based leaders in the communities using information technology can assist decongest counselling centers with limited number of family therapists and provide timely resolutions to family problems. To improve the systems of interactions, family therapy provides a structured form of psychotherapy that reduces distress and conflict between family members (Varghese, 2020). Addressing family problems and issues of concern in an appropriate manner helps in streamlining well-being, morals and behavior among family members in the country.

II. PREVIOUS EFFORTS IN CONFLICT RESOLUTIONS

Family problems are painful and traumatic and are the major cause of conflicts in the country. The media report on social problems such as robbery, suicide, truancy, drug abuse, murder is on the increase on daily basis.Every forty seconds, an individual commit suicide (Word Health Organization, 2019). In order to solve mental problems for conflict resolutions, mental health information systems (MHIS) have increasingly become key in improving the effectiveness of mental health care (Jordans et al, 2016).

Family therapy is psychological counseling or psychotherapy that help to improve communication and resolve conflicts among family members. In Kenya, it is estimated that one in every 10 people suffer from a common mental disorder. Kenya being one of 28% of World Health Organization member states have no separate mental health budget, and mental health expenditure by government is 0.01% of the total expenditure (Ministry of Health Kenya, 2020). As a result, people have to pay out of pocket for assistance or family therapy. The mental health care cover in Kenya is not done by many companies (Ministry of Health Kenya, 2020). Mental health related cases in the country is rising, such as depression, and other mental illnesses, which end up in suicidal cases causing a concern to the Government (Health Cabinet Secretary MutahiKagwe, 2020). Vulnerable people at homes like children, old persons and those with disabilities should be paid special attention.

In Kenya, family therapy and general mental health care remains limited in terms of infrastructure, staffing and finances. There are about 100 psychiatrists in Kenya and most of them are in major cities in the country (Meyer &Ndetei, 2015). Outside the cities, there is one psychiatrist per million populations. Currently in Kenya, the general substance use and mental health information is inadequate. The approximated outpatients of up to 25% and in-patients of up to 40% in medical centers suffer from mental conditions (KNCHR, 2011). Psychosis in Kenya is at an average of 1 % of the population (Kiima& Jenkins, 2012). Stress, depression, substance abuse and anxiety disorders are recurring diagnosis of mental illnesses made in general hospitals (Ndetei et al, 2008). Most of these mental illnesses are brought about due to poverty, lack of jobs, differences in opinions and values leading to misunderstandings and conflicts at homes.

The Kenya health information policy 2014-2030 and health Act, 2017 expound on a responsive system about health information for the needs of the national population. Although, the specific mental health conditions and monitoring of mental health interventions are not addressed fully by the existing health information system (Ministry of Health Kenya, 2020). The integration of the family therapy system and mental health services to national health information system is vital to improve the service delivery effectiveness and efficiency of mental health in the Countryfor timely resolution of conflicts.This would ensure collection of enough information on health for evidence-based decision making and improved quality of care. (World Health Organization, 2005).

Salleh et al., (2014), carried out a study on use of email communication to develop online counseling relationships between clients and counselors in Malaysia. The online counseling experience using the email was explained in a number of ways where counselors were allowed to peruse the clients' emails, think, respond, planning and find out the clients' problems (Dunn 2012). Counseling through email and chat enabled new methods of psychotherapy to be understood (Harris et al., 2012). However, according to the study, there were concerns about unreliable response in the online counseling relationship by the other party which was made by the asynchronous counseling process via email causing a blank screen (Suler, 2004). Handling of emergency cases such as suicidal attempt or abuse necessitated the provision of additional information from clients such as their location and complete background information for help.

The use of audio visual technology in career counseling services has been useful in the counselling process especially on important variables like values, interest, skills and ideas (Nota et al., 2016). Use of audiovisual instruments, like video tapes or slides help users to focus on key elements in development of their career (Pordelan et al., 2018). To narrate issues of concern by family members using their language into online text, provided the opportunities to bring back authorities to their narratives (Pordelan et al., 2018). Assisting counsellors to understand new concepts of the clients by themselves was important.

Financial constraints cause some of family members not to be included in the sessions hence family therapeutic efforts fail. Involving the key members involved in conflict or misunderstanding in the counseling sessions is important for mutual satisfaction, however this is a challenge to some families due to lack of money. Poor families experience stressors like food insecurity, housing problems, financial challenges. All members' involvement initially for advice should be encouraged to get back to therapy when the need arises as this is recommended (Varghese et al., 2020). Application of a universal way of including all the family members via the use of information technology applications helped address challenges and assist counselors to come up with solutions that can help parties involved.

Environmental factors, including physical, emotional or psychological stress, are the most causes of mental illness at homes. The environmental factors cause family members to make wrong decisions due to stigma and discrimination resulting in disputes. Stigmatization, discrimination and alienation are the key obstacles for people with mental disorders and victims of sexual violence in the societies (Dr. Afe&Ogunsemi, 2016). Family therapy provides a structured form of psychotherapy to reduce distress and conflict through improving the systems of interactions between family members (Varghese et al., 2020). Through affordable and accessible family therapy, family members was able to adjust to an immediate struggle with stress, medical issues, financial issues or mental health problems.

Information communication technology can change decision aid and counselling assistance activities (Savard et al, 2002). Application of ICT in career counseling assisted students with confusion on the choice of College to attend and choosing a profession in according to their education. Career guidance for basic education, include career education and individual counselling provided by career counsellors which is integrated into the educational curriculum (ILO, 2006). At the Romania schools, counsellors while practicing, they facilitate career and guidance in schools. The counsellors in schools, make use of services such as the email for client and counsellor communication, making it a key communication instrument to support the relationship between teachers and students. Short messaging service and phones are used for stronger interaction between more individuals providing a more efficient way than the traditional method (Dr. Scoda& Dr. Andrei, 2016).

Ithoughts is an online application a form of technology that has been used for the purpose of career development. Ithoughts, Headspace and unstuck applications enhance individuals' career decision making process (Osborn et al., 2014). The applications have been helpful to people in reducing negative metacognitions such as stress that can hinder their career decisions (Osborn et al., 2014). To stop negative career thoughts, applications like FlipHead thought-stopping has been used to enable the process by helping prepare clients on career problems sharing via journaling between sessions. Although forms of career services are crucial, ICT integration into the career guidance practice is not fully implemented (Bright, 2015). Counselling and therapeutic services faces challenges such as self-limited thinking, information quality, confidentiality and clients' extreme issues. A need for a better look into client extreme conditions is vital to alleviate emergency situations and challenges faced by clients living in marginalized areas.

Timely family therapy plays a major role in strengthening families during crisis and can be the most natural way of dealing with increased psychological problems in the country. Incorporating of local communities' counselors and faith based leaders in family therapy with the use of information communication technology applications would assist decongest counselling centers and provide timely resolutions to family critical problems. This is especially important in places where the counseling centers are few and far, stigmatization attached to mental illness, and where the risk of institutionalization is high due to rejection by family and poor socioeconomic conditions. The basis of healthy attachment depends on being able to fearlessly communicate emotions (Bowlby, 1988 & Johnson, 2004). The provision of a systemic approach to analyze family issues within a broader social system is crucial for the reduction of disputes and enhance families' well-being.

Home conflict due to differences of opinion cannot be avoided and therefore inevitable experiences for anyone in close personal relationships. Where there is no conflict usually signals lack of meaningful interaction due to potential differences among people. Conflict by itself is neither bad nor good. How conflict will be handled determines whether it will be constructive or destructive (Deutsch & Coleman, 2006). Family therapists would need to understand the basic processes of conflict at homes in order to maximize productive outcomes. Lack of proper coordination of care in communities' local counselors, faith based counselors, licensed family therapists greatly affect the families in accessing family therapy. Marginalization is costly to both family therapy and the mental health field (Shields & McDaniel, 2007). Problems of family members living in marginalized areas such as limited counseling centers which are far apart with limited family therapists, need much attention

and therefore an organized way of addressing the problems through the use of modern ICTs is crucial to resolve conflicts at the early stages of disagreement.

Most conflicts arise due to sharing of power and decision making between parents, difficulties in establishing affectional bonds between parents and children, clashes on values differences, sibling rivalry, father-son competition, illness, financial issues and the worst of all being not able to communicate thoughts and feelings. Family conflict results in a lot of social problems such as robbery, suicide, truancy, drug abuse, murder which is on the increase on daily basis. Every forty seconds, an individual commit suicide (Word Health Organization, 2019). Conflict among adolescents is much uncontrolled (Latipun, 2005). The increased vices have resulted in tremendous pressure on counseling centers' staff and long counseling sessions due to large numbers of family members who want to make the most of their time. Some families particularly those residing in marginalized areas are unable to access the counseling centers due to distance and lack of money.

Minor differences due to poverty among members of the family can escalate into major family conflicts involving actions that result in greater loss to the family as a whole. Unemployment and in-work poverty are associated with poorer mental health, psychological distress and higher mortality (Hodgkinson & Beers, 2016). Individual family member development techniques through family therapy can help solve the problems in advance. Counseling provides interaction and psychoeducational intervention that is willingly chosen by the client (Hayes et al, 2006). By helping the families access the family therapy, they become aware of their personal differences, hence reducing some of the anxiety and tension that inevitably lead to disputes. To help alleviate the stress for family members, family therapy helps family members to fearlessly present their problems for assistance. The use of family therapy prototype enabled easy access to family therapy services and reduce tremendous pressure on counseling centers' staff and long counseling sessions.

Family-based family therapies, such as Murray Bowen's family systems model,brief strategic family therapy (BSFT) often refer to theories of ecological systems and have shown great effects in reducing delinquency and drug use among adolescent (Rigter et al., 2013), reduction in further offence and substance use (Thornberry et al., 2018), emotional reduction and behavioral problems (Essau, 2002). Therapeutic services has led to major advantages when handling difficult family members. Family therapy provide effective treatment, particularly for drugs and stimulant use disorders (WHO, 2015). UNODC-WHO International Standards has recommended therapy services for drug use disorders treatment.

2.1 Murray Bowen's family systems model

The model was introduced in 1960s, to provide a more of scientific and objective processes and holds that individuals are not separated from their relationships. According to him, therapists can normalize human behavior for people in treatment since all therapists in one way or the other experienced problems within their original family and are aware. The family systems approach focus for change is not therapeutic relationship but the client's own family. The model main intervention is avoiding anxious reactions in the family by the therapist. The therapist need to stays out of family triangles (Brown, 2008). Family therapist encourage the family members to take part in family system. Individual participation is key compared to individual behavior in the system. (Brown, 2007). Character formation is crucial to address the structure and behavior of the broader relationship in the system. Family functions for a period are likely to be influenced by changes in behavior of a family member.

2.2 Brief solution-focused therapy

The therapy involves an approach whose emphasis is on recognition of own competencies by families. The approach concentrate on solutions not problems. Solution-focused therapists allow those with complains to remember an exception to the general rule about the difficult child (De Shazer 1982 & Berg 1991). The focus of the approach was to help the family by emphasizing on the exceptions which need patience and systematic work to get all variables surrounding these exceptions so that a family can prepare for them. Setting goals can often be difficult particularly family members with poor self-esteem, lack of confidence, and feeling not empowered. The therapists' job would be to work on issues of change and help families on how achieve them.

Three rules can be used to summarize brief solution-focused approach (Dallos& Draper 2000) as follows: -

If not broken don't fix it - Family therapist needs to work on the competencies present in families and built upon them.

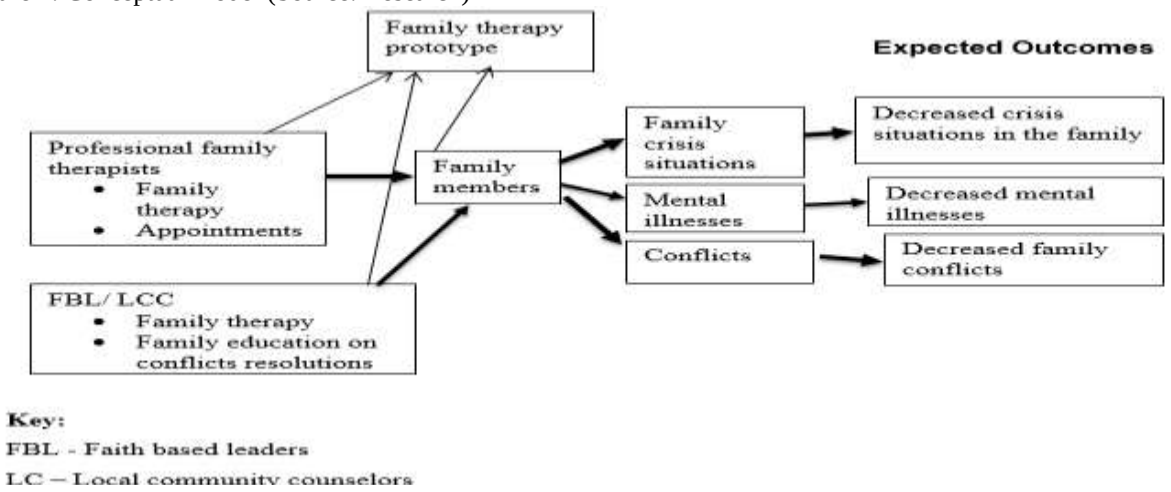
Do more on what works - The family therapist would need to encourage family members to do more on the once exceptions and competencies that have been discovered. This would result to cycle of success.

Do something different, if it did now work before - By searching for the exceptions, families would find other pattern with more positive outcome. Family therapist would need to encourage families to build upon new or alternative ways.

III. METHODOLOGY

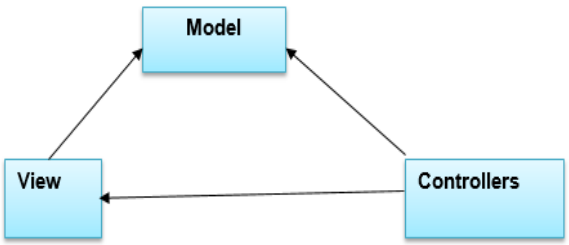
The goal was to develop an integrated family therapy prototypefor easy accessibility of family therapy by family members to help resolve home conflicts as soon as disagreement arises. The conceptual model shown in the Figure 1 below shows a representation of the family therapy for the family therapeutic services to family members by professional family therapists with the aid of local communities' counselors and faith based leaders. The solution is an innovation using existing technologies and it is in three modules, namely the therapy module, the user accounts module and the appointment module.

Figure 1: Conceptual model (Source: Research)



The family therapy prototype solution was programmed usingPHP Laravelmodel view controller (MVC) architecture pattern. The MVC pattern is as shown in the Figure 2 below.

Figure 2: Model view controller (MVC)(Source: Mr. Singh, S, 2020)



Controller - Controller handles inputs and interactions from users' view module and update the database using the model component. Controllers interface between model and view modules to process all the requests and manipulate data using the model and interact with the views to render the final output (Mr. Singh, S, 2020).

View - The View component refers to all the user interface logic of the prototype that is the input fields, text boxes, dropdowns that the user interacts with.

Model - The model involves data-related logic that the users of the family therapy prototype works with. Users can enter their details, retrieve their information from the database and update the database.

3.1 Requirement Analysis

The requirements of the family therapy prototype system were identified. The modules, functions and task specifications for the prototype were identified. The activities at this stage included identifying the problem statements, the objective, the scope and constraints of the prototype system. This then involved definition of the software and the hardware, collection of data and information used for development of the family therapy prototype system.

3.2 System design

System design focused on the design of the system components. The activities involved included the designing of the interfaces, designing of the database and the architecture view of the prototype system. The navigation flow and types of navigation controls of the family therapy prototype system was also defined.

3.3 Implementation

After system design the implementation activities of the family therapy prototype system was done. Implementation of components was done and unit testing whose objective was to ensure that the program units produced meet the requirements.The activities involved included identifying the expected output for the

prototype system, integrating all sub modules, producing the software code by correcting the errors that occurred during unit testing and maintaining the analysis of the family therapy prototype system.

3.4 Integration and system testing

The modules of the family therapy prototype system were integrated, then testing was performed on the system to ensure it meets the outlined specifications. The testing carried out included:

- **Unit testing** – carried out to ensure that reliable program units produced meets requirements. This involved testing of implementation of system components.
- **System testing -** involved prototype system specification, testing for failures, that demonstrated and determined that the components interact together correctly, are stable and coherent.
- **Integration testing** was used to test whether all units and component meet the requirements specification when integrated as a single family therapy prototype system for easy usage by the family members and family therapists.

3.5 Deployment and Maintenance

Focused on deployment and maintaining the family therapy prototype system. The system was checked to ensure the records and details of family therapy activities, procedures and requirements are met. The identified issues were fixed to enhance the prototype functionality.

3.6 Prototype development procedures

The development of the family therapy prototype system followed the following procedure.

i. Analysis

The family therapy prototype system was analyzed, where different parts and sections with different functionality of the system was identified.

ii. Designing

The designing of the family therapy prototype system interfaces was developed including the database where data will be stored for retrieval during therapeutic services.

iii. Development and completion of the system

The different system parts were combined to come up with one desired complete family therapy prototype system.

iv. System testing

After the combination of the different parts into one system, the family therapy system was tested to check if it serves its purpose or core aim.

3.7 The Prototype System Modules

The family therapy prototype solution modules included the therapy module, user accounts module and the appointment module.

3.7.1 The therapy module

The therapy module consists of the messages section where authorized family members enter their problems, view help and guidance from family therapists. The family therapists can also provide help and guidance, resolve the problem when family members confirm to be satisfied or guided on the underlying issues.

3.7.2 The user accounts module

The user module consists of the management functionalities of the existing and the new users. For users to access the prototype they register, login and access their respective dashboards. Family therapists, local community counselors and faith based leaders have to be approved to provide assistance to family members.

3.7.3 The appointment module

The appointment module consists of the appointment scheduling section which is integrated with the short message service (SMS) application programming interface (API) for instant notification to family members.

3.8Interface

Family therapy prototype interface accessibility is through a URL address using the browsers. The authorized family members and family therapists access their respective dashboards with different roles and navigations.Users' information is saved into a database and the prototype interface is capable of displaying the information on the database for specific tasks performed. The prototype system is programmed in PHP, Laravel model view controller (MVC) framework.This solution can be hosted on a server based at ISP (internet service provider) and accessed from the internet using browsers through a web interface. Access to the database is restricted to authorized family members, and the family therapists only with every pages secured with sessions.

3.9Testing and Evaluation

Software testing was crucial to ensure quality and functionality of the prototype system was achieved. Family therapy prototype involved a number of tests at different stages of the development cycle. Testing aim involved: -

- Initialization and termination errors
- Errors in database structure and access
- Interface errors
- Performance errors

3.9.1 Functional testing

Functional tests conducted for the family therapy prototype to check whether it meets the functional requirements and behaves as expected. Table 1 below shows some selected test cases done on the family therapy prototype to test the functionalities of the prototype:

Table 1: Prototype functional testing (Source: Research)

Tests Numbers	Action	Results	Remark
Test 001	User fill registration form and click register button	User was registered and redirected to dashboard	Passed
Test 002	User click login button	Login form open where user enter details for login	Passed
Test 003	Family member click therapy button to enter their problems	Message box open where they enter problems and sent to therapists	Passed
Test 004	Family therapist click to view family member problems	View family members problems and provide help	Passed
Test 005	Family therapist click to enter help or guidance	Enter help or guidance and sent to family member	Passed
Test 006	Family therapist schedule for an appointment	Schedule for an appointment with family member	Passed

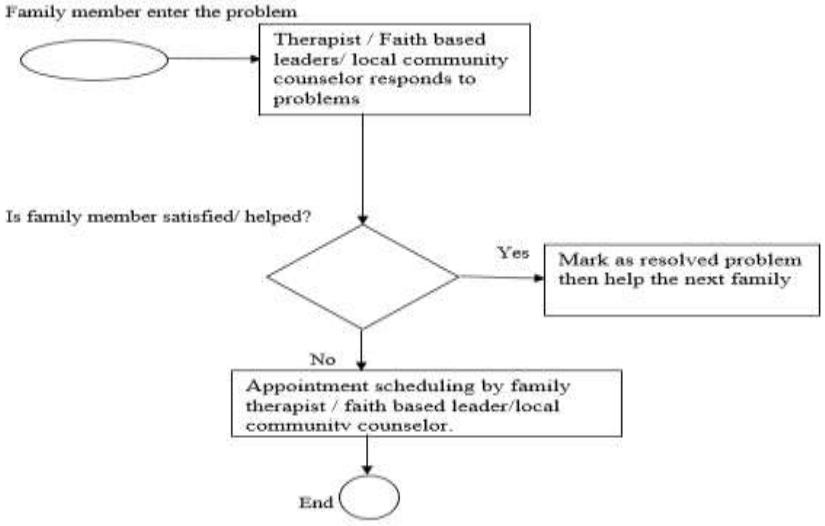
3.9.2 Usability testing

Usability is an important factor for all software quality as it influences its acceptance (Nielsen J, 1993). Usability testing attempts to discover aspects of the system that users may have issues with. Nielsen attributes of usability included learnability, efficiency, memorability, errors and satisfaction. The developed family therapy prototype usability tests involve a quantitative survey to determine the usability by measuring the specific metrics such as effectiveness, efficiency and user satisfaction.

IV. GENERAL PROCEDURE

The family members and family therapists are required to register and login to access their respective dashboards with different roles and navigations. [1] Family members can enter their problems and issues of concern for help through the therapy module. [2] The family therapists enter help and guidance to family members and depending on the problems being handled, can schedule for an appointment which can notify the specified family members through short message service (SMS). [3] Family members can view therapists' help or guidance. [4] Problems marked resolved when family members are satisfied with the help or guidance. The families' problems and issues of concern and family therapists help or guidance and appointments made are stored in the database. Database information is displayed to authorized users on the prototype interface for follow ups. Figure 3 below shows the general procedure of the prototype system.

Figure 3: Flowchart(Source: Research)



4.1 Methods

A summative survey was done to evaluate the prototype system usability basing on the system usability scale (SUS) created by John Brooke. SUS showed to be the most accurate for the fewest number of participants hence was chosen for analysis (Tullis& Stetson, 2004). Prototype link and questionnaires were shared with family members, family psychologists, local communities' counselors and faith based leaders. 143 participants were selected randomly and participated voluntarily in the study. After each usability testing session, users had to fill the questionnaire. The questions were designed to get quick feedback for each testing session after performing some tasks on the prototype. System usability scale scoring based on a 5-point Likert scale that is strongly disagree, disagree, Neutral, agree and strongly agree. The following are the tasks that were performed by the participants: -

Tasks included: -

a. Login
b. Update profile information
c. Enter problems for help
d. Provide help and guidance
e. Create appointments and view appointments
f. View notification and messages
g. Logout

Problems and issues of concerns were created by family members then sent to family therapist, faith based leader or local community counselor. Family problems were only visible to specified therapists after their account was approved. Family therapists, faith based leaders or local communities' counselors were able to view the problems and provide guidance and help. Appointments was made by the family therapists and notification message send to the family members phone. Family members and family therapists were able to track the appointments through the prototype system calendar. Testing of the prototype involved use of the laptop and desktop computers where the data from the survey was analyzed for the quantitative usability metrics.

System usability scale (SUS) questionnaire was used where participants filled the questions after the usability test. The SUS questions were modified and improved to be specific for family therapy prototype system as shown below. The questions classification involved a scale from 1 to 5.

1. I think that I would like to use this family therapy prototype system frequently.

- Strong disagree
- Disagree
- Neutral
- Agree
- Strongly disagree

2. I found the family therapy prototype system unnecessarily complex.

- Strong disagree
- Disagree
- Neutral
- Agree
- Strongly disagree

3. I thought the family therapy prototype system was easy to use.

- Strong disagree
- Disagree
- Neutral
- Agree
- Strongly disagree

4. I think that I would need the support of a technical person to be able to use this family therapy prototype system.

- Strong disagree
- Disagree
- Neutral
- Agree
- Strongly disagree

5. I found the various functions in this family therapy prototype system were well integrated.

- Strong disagree
- Disagree
- Neutral

- Agree
- Strongly disagree

6. I thought there was too much inconsistency in this family therapy prototype system.
- Strong disagree
- Disagree
- Neutral
- Agree
- Strongly disagree

7. I would imagine that most people would learn to use this family therapy prototype system very quickly.
- Strong disagree
- Disagree
- Neutral
- Agree
- Strongly disagree

8. I found the family therapy prototype system very cumbersome to use.
- Strong disagree
- Disagree
- Neutral
- Agree
- Strongly disagree

9. I felt very confident using the family therapy prototype system.
- Strong disagree
- Disagree
- Neutral
- Agree
- Strongly disagree

10. I needed to learn a lot of things before I could get going with this family therapy prototype system.
- Strong disagree
- Disagree
- Neutral
- Agree
- Strongly disagree

11. I found the information and steps provided by the family therapy prototype easy to understand.
- Strong disagree
- Disagree
- Neutral
- Agree
- Strongly disagree

12. I needed more information in order to understand the family therapy prototype system.
- Strong disagree
- Disagree
- Neutral
- Agree
- Strongly disagree

V. RESULTS

After the development and testing of the family therapy prototype system, evaluation was done to determine whether the developed system is delivery the expected results. The following areas were evaluated to provide answers to the research questions of the project in line with the project objectives.

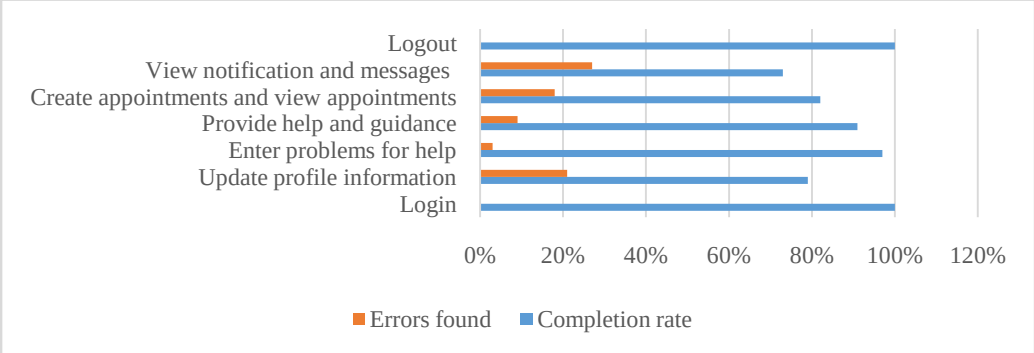
5.1 Determining the accessibility of family therapy by family members for home conflicts resolutions.

In order to determine this, the family therapy prototype URL was shared with the users who performed the tasks as shown below. The key metrics measured for the effectiveness of the prototype during usability test involved percentage of completion rate and the number of errors found in a prototype system. The results are as shown in the Table 2 below-:

Table 2: Results on accessibility of family therapy by family members.(Source: Research)

Tasks	**Completion rate**	**Errors found**
Login	100%	0%
Update profile information	79%	21%
Enter problems for help	97%	3%
Provide help and guidance	91%	9%
Create appointments and view appointments	82%	18%
View notification and messages	73%	27%
Logout	100%	0%

Figure 4. Accessibility of family therapy by family members(Source: Research)



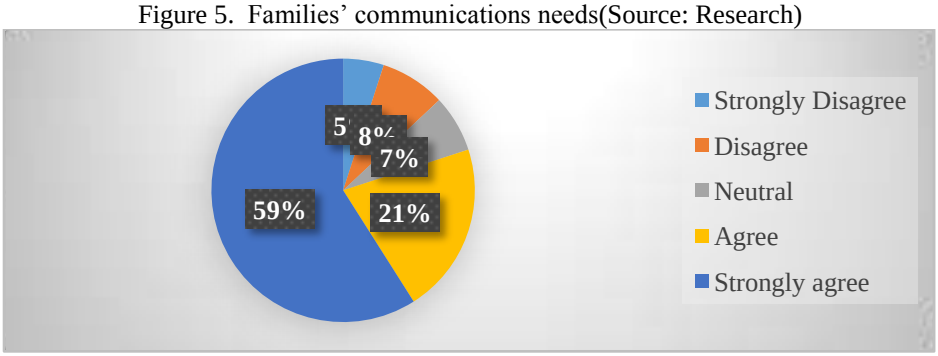
5.2 Determining families' communications needs and how it can be addressed to help reduce conflicts at homes.

Addressing the communication need for family members with professional family therapists using the prototype was crucial to avoid escalation of problems at homes. To ascertain this, testing was done and users performed tasks on the family therapy prototype. The prototype was found to be able to fulfill the communication needs of the family members. Users were satisfied with the prototype as shown in the Table 3 below;

Table3: Satisfaction on families' communications needs (Source: Research)

User satisfaction	
Strongly Disagree	5%
Disagree	8%
Neutral	7%
Agree	21%
Strongly agree	59%

Figure 5. Families' communications needs(Source: Research)



5.3 Measuring the success rate of incorporating professional therapists, local communities' counselors or faith based leaders in family therapy for timely home conflict resolutions.

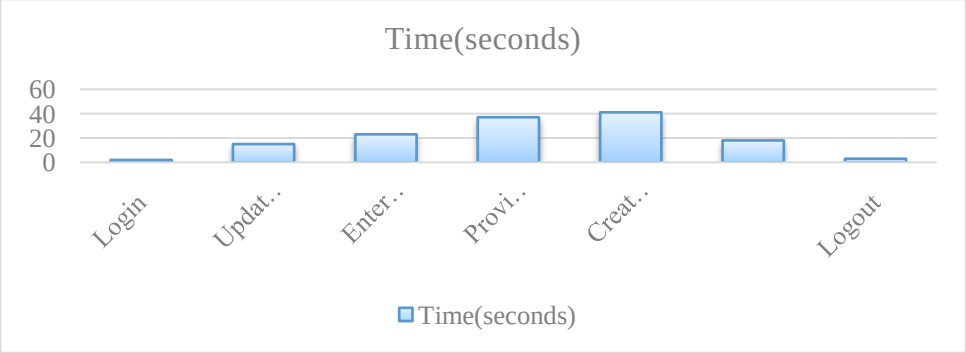
The incorporation of the professional family therapists, local community counselors and faith based leaders is vital to handle the increasing number of families in crisis situations at homes. In carrying out this evaluation, users registered and logged in concurrently and performed tasks on the family therapy prototype, an instant notification was sent to the phone via SMS API for appointments. The aim was to the measure of the

percentage of users' task successful completion rate for every unit time. Table 4 presents a summary of the statistics taken in this experiment.

Table 4: Results of success rate of incorporating professional therapists, local communities' counselors or faith based leaders in family therapy for timely home conflict resolutions(Source: Research)

Tasks	**Time (seconds)**
Login	2
Update profile information	15
Enter problems for help	23
Provide help and guidance	37
Create appointments and view appointments	41
View notification and messages	18
Logout	3

Figure 6. Success rate of incorporating professional therapists, local communities' counselors or faith based leaders in family therapy for timely home conflict resolutions(Source: Research)



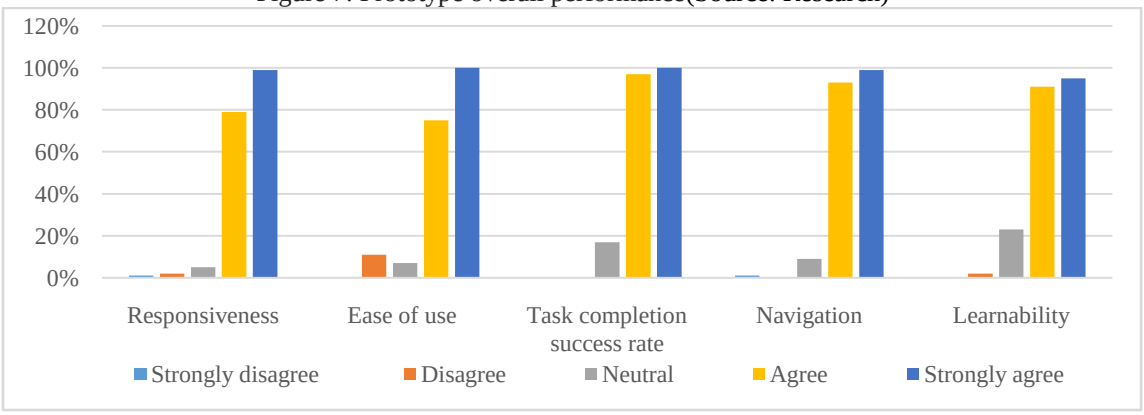
5.4 Prototype overall performance

The family therapy prototype overall performance was determined basing on the user interface's responsiveness, navigation, ease of use and task completion success rate. The prototype was positively rated basing on the metrics as shown in the Table 5 below.

Table 5: Prototype overall performance(Source: Research)

Overall performance	**Strongly disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly agree**
Responsiveness	1%	2%	5%	79%	99%
Ease of use	0%	11%	7%	75%	98%
Task completion success rate	0%	0%	17%	97%	100%
Navigation	1%	0%	9%	93%	99%
Learnability	0%	2%	23%	91%	95%

Figure 7: Prototype overall performance(Source: Research)



VI. CONCLUSION

To conclude, it's clear from the research that the increased number of conflicts was due to lack of timely access to family therapy by family members for guidance and help. The project focused on the development of the family therapy prototype system to enable easy access of family therapy by authorized family members for conflict resolutions at homes. The prototype also enabled family members to communicate their problems of concerns to family therapists, local community counselors and the faith based leaders who were concurrently accessing the system to offer family therapy. The results from the evaluations done indicated successful and satisfaction for the tasks performed by users. The prototype development was successful with family members being able to present their problems of concerns to family therapists for help. The prototype handled family members' communication needs and aided in provision of timely guidance on their problems for conflict resolutions at homes and the society at large.

The prototype can be integrated with healthcare systems to address mental health conditions and Country's therapeutic services. The prototype implementation involved modern model view controller (MVC) architecture with application programming interface (APIs) integration capabilities for integration with existing healthcare management systems. This address the timely access of family therapy by family members at homes for handling mental health problems and family crisis situations that leads to conflicts. This prompt early discovery of conflicts at homes while at the same time minimizing the increased vices among family members, ensuring well-being and good morals among family members and the society at large.

Further Work

Further research can be carried out to enable the incorporation of artificial intelligence capabilities to enhance the prototype functionalities.

The family therapy prototype can also be integrated using APIs with other healthcare systems for commercial use in counseling centers and hospitals health information system.

ACKNOWLGEMENT

Firstly, I would like to acknowledge the Almighty God for helping me through the entire period of researching, writing and working on this paper. I also acknowledge Dr. Christopher KipchumbaChepken, my supervisor, who deserves a lot of thanks for his useful guidance. My gratitude also goes to the University of Nairobi for providing me with researching resources and other support services.

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THE PROTOTYPE SOFTWARE CODE

Controllers

User account creation/registration controller

```
use App\User;
use App\Http\Controllers\Controller;
use Illuminate\Support\Facades\Hash;
use Illuminate\Support\Facades\Validator;
use Illuminate\Foundation\Auth\RegistersUsers;
use Illuminate\Http\Request;
use Illuminate\Notifications\Notifiable;
classRegisterController extends Controller
{
protected function validator(array $data)
   {
return Validator::make($data, [
```

```
            'name' => ['required', 'string','min:3', 'max:25'],
            'email' => ['required', 'string', 'email', 'max:50', 'unique:users'],
            'password' => ['required', 'string', 'min:8', 'confirmed'],
            'phone' => ['required', 'numeric', 'unique:users'],
            'type' => ['required', 'string','min:3', 'max:255'],
            'status' => ['required'],
        ]);
    }
    /**
     * Create a new user instance after a valid registration.
     *
     * @param  array  $data
     * @return \App\User
     */
protected function create(array $data)
    {
return User::create([
            'name' => $data['name'],
            'email' => $data['email'],
            'password' => Hash::make($data['password']),
            'phone' => $data['phone'],
            'about' => $data['about'],
            'currentplace' => $data['currentplace'],
            'type' => $data['type'],
            'status' => $data['status'],
            'image' => $data['image'],
        ]);
    }
```

Login Controller

```
use App\Http\Controllers\Controller;
use Illuminate\Foundation\Auth\AuthenticatesUsers;
classLoginController extends Controller
{
useAuthenticatesUsers;
protected $redirectTo = '/home';
    /**
     * Create a new controller instance.
     *
     * @return void
     */
public function __construct()
    {
        $this->middleware('guest')->except('logout');
    }
}
```

Users Dashboard/ Home Controllers

```
public function index(Request $request)
    {
      //Checks to see what Role Id the Logged in user has.
        $Id = Auth::user()->id;
        $CurrentUser = User::find($Id);
        $UsersRole = $CurrentUser->role;
        $Partner = $CurrentUser->partners;
        $RoleId = $UsersRole->id;
        // totals
        $users = User::paginate(10);
        $UID=Auth::id();
        $user = User::find($UID);
        $therapies = Therapy::orderBy('created_at', 'asc')->where(function($q){
        $UID=Auth::id();
```

```
        $user = User::find($UID);
        $q->where('created_byemail',$user->email)->orWhere('recipient_email',$user->email);
})->paginate(10);
        $notifications = Therapy::orderBy('created_at', 'asc')->where(function($q){
        $UID=Auth::id();
        $user = User::find($UID);
        $q->where('resolved_recipient_email',$user->email)->orWhere('resolved_byemail',$user->email);
})->paginate(10);
        $therapists = Therapist::orderBy('created_at', 'asc')->where('created_by', $user->email)->paginate(10);
       $appointments = Appointment::orderBy('created_at', 'desc')->where(function($q){
        $UID=Auth::id();
        $user = User::find($UID);
        $q->where('user_id',$user->id)->orWhere('recipient_id', $user->id);
})->Paginate(100);
        //Depending on the Role Id different Dashboards are loaded.
if ($RoleId == 2) {
          return view('familymemberDash',compact('UsersRole', 'users','therapists','therapies', 'appointments',
'notifications'));  }
else if ($RoleId == 4) {
      $allappointments = Appointment::orderBy('created_at', 'desc')->paginate(10);
      $approvals = User::where([
        ['type', '!=','Familymember'],
        ['role_id','=', 2],
])->Paginate(10);
           return view('admin.adminDash', compact('UsersRole', 'users','therapists','therapies',
'allappointments','notifications', 'approvals'));  }
else if ($RoleId == 1) {
              return view('therapists.therapistDash', compact('UsersRole', 'users','therapists','therapies',
'appointments','notifications'));  }
else {
return view('auth.login');  }
    }
```

Therapy controller

```
<?php
namespace App\Http\Controllers;
use Illuminate\Http\Request;
useAfricasTalkingGateway\AfricasTalkingGateway;
use App\Therapy;
use App\Therapist;
use App\User;
use DB;
useAuth;
classFamilytherapyController extends Controller
{
public function providehelpform($id)
    {
        $user = DB::table('users')->where('id', $id)->first();
        $therapist = DB::table('therapists')->where('id', $id)->first();
return view('therapists.providehelp',compact('user', 'therapist'));
    }
public function SendTherapy(Request $request, Therapy $id){
        $therapy = new Therapy();
        $therapy->recipient_email = $request->input('recipient_email');
if(!$therapy->recipient_email)  {
return redirect()->back()->with('messages', 'Field cannot be empty');
        }
        $messages = "A message has been sent";
        $therapy->message = $request->input('message');
if(!$therapy->message)  {
return redirect()->back()->with('messages', 'Message field cannot be empty');
```

```
        }
        $messages = "Successfully sent";
    $therapy->recipient_name = $request->input('recipient_name');
    $therapy->created_byphone = $request->input('created_byphone');
    $therapy->created_byname = $request->input('created_byname');
    $therapy->created_byemail = $request->input('created_byemail');
    $therapy->created_byimage = $request->input('created_byimage');
    $therapy->user_id = $request->input('user_id');
 $therapy->save();
return redirect("/therapy");
  }
//search data
public function search(Request $request){
    $UID=Auth::id();
    $user = User::find($UID);
    $therapists = Therapist::orderBy('created_at', 'asc')->where('created_by', $user->email)->get();
    $therapies = Therapy::where('recipients_email', 'LIKE',"%{$request->search}%")->get();
return view('familytherapy',compact('therapies','therapists'));
    }
// get therapies requests/ help given
public function therapy()
    {
    $therapies = Therapy::orderBy('created_at', 'asc')->where(function($q){
        $UID=Auth::id();
        $user = User::find($UID);
        $q->where('created_byemail',$user->email)->orWhere('recipient_email',$user->email);
})->get();
        $therapists = Therapist::orderBy('created_at', 'asc')->where('created_by', $user->email)->get();
return view('familytherapy',compact('therapies','therapists'));
    }
//Delete therapy
public function delete($id)
    {
        $therapy = Therapy::find($id);
        $therapy ->delete();
return redirect()->back();
    }
```

Therapists controller

```
namespace App\Http\Controllers;
use App\Therapist;
use Illuminate\Http\Request;
use Carbon;
use App\User;
use DB;
useAuth;
useAfricasTalkingGateway\AfricasTalkingGateway;
classTherapistsController extends Controller
{
public function __construct()
    {
        $this->middleware(['auth']);
    }
public function store(Request $request)
    {
        $request ->validate([
            'Name' => 'required|min:3',
            'Phone' => 'required|numeric|min:10',
        ]);
        $therapist = new Therapist();
```

```
        $therapist -> Name = $request -> Name;
        $therapist -> Phone = $request -> Phone;
        $therapist -> email = $request -> email;
         $therapist ->user_id = $request ->user_id;
        $therapist -> image = $request -> image;
        $therapist ->created_by = $request ->created_by;
        $therapist ->created_byphone = $request ->created_byphone;
        $therapist ->save();
return redirect()->route('therapists');
    }
```

Models

User model

```
<?php
namespace App;
use Illuminate\Notifications\Notifiable;
use Illuminate\Contracts\Auth\MustVerifyEmail;
use Illuminate\Foundation\Auth\User as Authenticatable;
class User extends Authenticatable  implements MustVerifyEmail
{
use Notifiable;
protected $fillable = [
        'name', 'email','role_id', 'phone','currentplace','password','image','type','status','about',
    ];
    /**
     * The attributes that should be hidden for arrays.
     *
     * @var array
     */
protected $hidden = [
        'password', 'remember_token',
    ];
  /* Sets the relationships between a User
and Roles. */
public function Role() {
return $this->belongsTo(Role::class);
    }
```

Appointment model

```
<?php
namespace App;
use Illuminate\Database\Eloquent\Model;
use Illuminate\Database\Eloquent\SoftDeletes;
class Appointment extends Model
{
 protected                                                $fillable                                                =
['Name','Phone','Email','recipient_id','start_time','finish_time','created_byname','created_byemail','created_bypho
ne','user_id'];
protected $hidden = ['created_at', 'updated_at','deleted_at'];
}
```

Views

Login view

```
<center><div class="panel-heading">Login to your account</div></center>
<br/>
<div  class="panel-body"><form  class="form-horizontal" role="form" method="POST" action="{{ url('/login')
}}">
                    {{ csrf_field() }}
<div  class="form-group{{ $errors->has('email') ? ' has-error' : '' }}">
<label for="email" class="col-md-4 control-label">Username</label>
<div class="col-md-6">
<input  id="email"  type="email"  class="form-control"  name="email"  value="{{  old('email')  }}"
placeholder="Enter email address" required autofocus>
```

```
                    @if ($errors->has('email'))
<span class="help-block">
<strong>{{ $errors->first('email') }}</strong>
</span>
                    @endif
</div>
</div>
<div class="form-group{{ $errors->has('password') ? ' has-error' : '' }}">
<label for="password" class="col-md-4 control-label">Password</label>
<div class="col-md-6">
<input id="password" type="password" class="form-control" name="password" placeholder="Enter password" required>
@if ($errors->has('password'))
<span class="help-block">
<strong>{{ $errors->first('password') }}</strong>
</span>
                    @endif
</div>
</div>
<div class="form-group">
<div class="col-md-8 col-md-offset-4">
<button type="submit" class="btnbtn-primary">
                        Login
</button><br/>
<br/>
</div>
</div>
</form>
```

Therapy form

```
<form id="myForm" method="POST" action="{{ route('sendTherapy') }}" role="form" enctype="multipart/form-data">
                {{csrf_field()}}
<fieldset>
<div class="form-group">
@if(Auth::user()->role_id ==2)
<div class="multiselect">
<div class="selectBox" onclick="showCheckboxes()">
<select>
<option>+select</option>
</select>
<div class="overSelect"></div>
</div>
<div id="checkboxes">
<select id="therapist" name="recipient_email"  data-select="false" required="">
<option value="">Select Therapists</option>
                        @foreach ($therapists as $t)
<option type="checkbox" value="{{$t->email}}">{{$t->Name}}</option>
                        @endforeach
</select>
<a href="/therapist/create" > + therapist</a>
</div>
</div>
</div>
<div class="form-group">
<textarea id="" class="form-control type_msg" placeholder="" name="message" type="text" rows="4" cols="50" autofocus required=""></textarea>
</div>
<input type="hidden" name="created_byphone" value="{{{Auth::user()->phone}}}" class="form-control" id="phone">
```

```
<input type="hidden" name="created_byname" value="{{{Auth::user()->name}}}" class="form-control" id="
created_byname ">
<input type="hidden" name="created_byemail" value="{{{Auth::user()->email}}}" class="form-control" id="
created_byemail ">
<input type="hidden" name="user_id" value="{{{Auth::user()->id}}}" class="form-control" id="">
<div class="input-group-append">
<button id="submitBtn" type="submit" class="input-group-text send_btn"><i class="fas fa-location-
arrow"></i></button>
</div>
</fieldset>
</form>
```

Appointment creation view

```
<div class="table-heading">
<center><h5>Create an appointment with <b>{!! $user->name !!}</b>
<br/><br/>
            @if (Auth::guest())
              @else
@if($user->role_id == 2 and $user->type == "Familymember")
<form id="myForm" method="POST" action="{{ route('saveAppointment') }}" role="form"
enctype="multipart/form-data">
    {{ csrf_field() }}
<div class="row justify-content-center">
<div class="col-md-10">
<input type="hidden" name="Name" value="{{$user->name}}" id="Name">
<input type="hidden" name="Phone" value="{{$user->phone}}" id="phone">
<input type="hidden" name="Email" value="{{$user->email}}" id="email">
<input type="hidden" name="recipient_id" value="{{$user->id}}" id="id">
<b>Start time:</b><input type="datetime-local" name="start_time" class="form-control datetime" value="{{
old('start_time', isset($appointment) ? $appointment->start_time : '') }}" id="start_time" required>
<b>Finish time:</b><input type="datetime-local" name="finish_time" id="datetimepicker12" class="form-
control datetime" value="{{ old('finish_time', isset($appointment) ? $appointment->finish_time : '') }}" required
>
<div class="form-group">
<center><button type="submit" class="btnbtn-primary">submit</button></center>
</div>
</form>
```

Michael Simiyu Mtende. “Home Conflicts Resolution Through Family Therapy.” *IOSR Journal of Computer Engineering (IOSR-JCE)*, 25(2), 2023, pp. 56-74.