**THE ROLE OF THE OKIGUSURI SYSTEM IN MEDICINE ACCESSIBILITY, AVAILABILITY, AND AFFORDABILITY IN KISARAWE DISTRICT**

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**A DISSERTATION SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF DEGREE OF MASTERS OF ARTS IN MONITORING AND EVALUATION OF THE OPEN UNIVERSITY OF TANZANIA**

**2023**

# **CERTIFICATION**

The undersigned certify that they have read and hereby recommend for examination of the dissertation entitled ***“The role of the Okigusuri system in medicine accessibility, availability, and affordability in kisarawe district”*** in partial fulfillment of the requirement for the degree of Master of Arts in Monitoring and Evaluation of the Open University of Tanzania.

**……………………………….**

**Dr. Harrieth. G. Mtae.**

**(Supervisor)**

**Date…………………………..**

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**DECLARATION**

I**, Gothbert Peter Mnyanyi,** declare that this dissertation is my original work and that it has not been presented and will not be presented to any other university for a similar or any other degree award.

**……………………………..……….**

**Signature.**

**……………………………..**

**Date**

**DEDICATION**

I dedicate this proposal to loving wife ALMA DAMASY and my family for their invaluable support, encouragement and inspiration throughout the research period.

**ACKNOWLEDGEMENT**

I would like to express my deepest gratitude and appreciation to God Almighty for His abundant blessings, guidance, and strength throughout this research journey. Without His divine intervention, none of this would have been possible.

I am immensely grateful to my supervisor, Dr. Harrieth G Mtae. Your guidance, expertise, and unwavering support have been instrumental in shaping this dissertation. Your invaluable insights, constructive feedback, and encouragement throughout this research journey have truly been a source of inspiration for me. I am incredibly grateful for the opportunity to work under your guidance.

I would also like to extend my heartfelt thanks to my wife, Alma Damasy, and Afrimedico for their unwavering love, understanding, and continuous encouragement. Your unwavering support, patience, and belief in me have been a constant source of motivation and strength, enabling me to overcome challenges and persevere in this academic pursuit. I am truly grateful.

Furthermore, I would like to express my sincere appreciation to Kisarawe District Officials for granting me access to their villages, Bwama and Mlegele, without which the successful completion of this research would not have been possible. The support and cooperation extended to me by the staff at Kisarawe District Referral Hospital have been invaluable and greatly contributed to the quality of data gathered for this study.

Lastly, I would like to acknowledge the contributions of all candidates of Masters of Arts in Monitoring and Evaluation, who generously shared their time, experiences, and insights during this research. Their willingness to participate and provide valuable information has significantly enriched this dissertation.

# **ABSTRACT**

The study aimed to evaluate the role of Okigusuri system in medicine accessibility, affordability and availability in kisarawe district. The cross-sectional design was employed and a purposive sampling technique was used to attain the sample size of 140 respondents from Bwama and Mlegele villages where by 70 respondents were beneficiaries of Okigusuri system and 70 respondents were not Okigusuri beneficiaries. The questionnaire, and documentary review methods were used in data collection. The quantitative data were analyzed using SPSS involving both descriptive and inferential statistical analysis to get frequencies, mean, crosstabulations and carryout correlation as well as linear regression analysis. Time costs and medical costs were found to be the burden to medical accessibility, the major means of transport was motorcycle with a mean cost of 3750 Tshs, the mean waiting time and consultation time were 46.57 minutes and 15.43 minutes respectively. The average medical cost was 12000Tshs but only 12.9% of non Okigusuri users were willing to pay for this bill, and it was reported that it might take them 1 to 3 days to cover this bill. It was also reported that 44.3% of Okigusuri users have gained health knowledge on appropriate self-medications, it has also been seen in regression analysis that Okigusuri use has 26.1% variations on appropriate self-medication and it is significance since it has a p-value of. 000 which is less than 0.05. Multisectoral engagement in ensuring medicine availability in rural areas is needed, as Okigusuri has succeeded in its goals although more coverage and engagement is needed. MSD has to ensure constant supply of medicines in public dispensaries in rural areas to avoid frequent out of stock.

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**LIST OF ABBREVIATIONS /ACRONYMS**

OUT Open University of Tanzania

MAME Master of Arts in Monitoring and Evaluation

M&E Monitoring and Evaluation

WHO World Health Organization

MOH Ministry of Health.

MSD Medical Store Department

PST Pharmaceutical Society of Tanzania

JICA Japan International Cooperation Agency

SDGs Sustainable development goals

URT United Republic of Tanzania

MTMT Malagasy Traditional Medicine Theory

NHIF National Health Insurance Funds

MS Excel Microsoft Excel

SPSS Statistical Package for Social Science

# **CHAPTER ONE**

# **INTRODUCTION**

# **1.1 Background of the Study**

About 300 years ago Japan faced a critical health problem where many people were dying, while poverty and access to essential medicine were major causative factors,(Toyama, 2018) Then emerged a new health approach, the introduction of OKIGUSURI system, a Japanese mode which means “*use first pay later”* where by medicines/medical products are delivered to households by apothecary/pharmaceutical personnel in a special box and household members can use when needs arise, then the apothecary can revisit in a scheduled visit(i.e. after two weeks/after a month) to correct money for what has been used and refill medicine that has been used or add new ones if are needed.

The system improved the availability of medicine in remote/rural areas and hard reaching areas and served lives of many people who could not afford medical bills at a time. (Megumi, 2015). In Toyama Prefecture, OKIGUSURI system is still dominant to date and its operation is well sophisticated wherein each household is asked to set a medicine box (Okigusuri boxes) in their home which houses a variety of medicines, used for treating general ailments such as colds, headaches, injuries, diarrhea, some supplements etc. Then a member of each household – or client – can use the medicine from the box when they need it, and a salesperson/ pharmaceutical personnel visits each household periodically, collects the fees for drugs that have been used, and replenishes those that are running low. (Toyama, 2018).

Mongolia in 2004 they introduced a model for increasing access and availability of primary health care in rural Mongolia that disseminated traditional medicines through a “use first – pay later” family pharmacy kit model, which was achieved through a project supported by The Nippon Foundation and implemented by the nongovernmental organization Mongolia in collaboration with the Ministry of Health of Mongolia and WHO, (Ulaanbaatar, 2017) , In this project traditional medicines for personal home use were provided through a “family pharmacy kit” to rural, nomadic families through a pay-as-you-use system made popular in Japan. A reading material was placed inside the kit to assist easy instruction for self-medication, household to participate in the project were selected based on some criteria, until 2006 about 10000 households in 15 villages were using this system as their best house-based hospital approach, survey done to some household revealed to make health services available accessible and affordable.

In 2014 Myanmar introduced Okigusuri system in the country as a model for improving primary health care in rule areas due to major outbreak of malaria and cholera the country has experience and loss of villagers, the major challenge emerged was inadequate periodic visit of a doctor/pharmaceutical personnel who couldn’t cover all villages, which led to delay in refilling the medicines.

Okigusuri system in Tanzania was introduced in 2015 and it is operated by a Japanese organization known as Afrimedico, to people and communities in remote and hard to reach areas where access to medicines and quality health-care service is not guaranteed. With the aim of ensuring availability, accessibility to affordable, and quality medicine, and to enhance community engagement and provide them with self-medication education. The programme has been implemented in two villages (Bwama and Mlegele) kisarawe district Pwani region for five years as pilot project, with over 220 households using Okigusuri system by 2021. Okigusuri joined forces with Pharmaceutical society of Tanzania (PST) in providing medicines and education services to the villagers in need for the services.

Okigusuri system in Tanzania under Afrimedico was a five-year pilot project, which believed that provision of Okigusuri box with medicine for primary health care in Tanzania rural areas will be a solution for improving accessibility, availability and affordability of medicine and primary health care as well as provision of self-medication education, thus increase in health literate rate, the project aimed at housing 500 households by 2021 in all illegible villages of Kisarawe district. Afrimedico Operations in Tanzania are mainly depending in Fundraising and Grants from different institutions and organizations from Japan, JICA being one of them.

In Tanzania, Medical Stores Department (MSD) is an autonomous department under the Ministry of Health, Community Development, Gender, Elderly and Children established by the Act of Parliament No. 13 of 1993, the Department has responsibility to develop, maintain and manage an efficient and cost effective logistics system of Procurement, Storage and distribution of safe and quality essential medicines, medical supplies and laboratory reagents for public and approved private health facilities. (MSD, 2008).

Medical store department (MSD) in 2013 introduced a distribution system known as Direct Delivery (dd), where by medicines are delivered directly to the health centers in the villages, unlike old method of using district hospital as end point of delivering, (MSD, 2014), despite the introduction of direct delivery system, essential medicine availability is still a problem in Tanzania rural areas, many areas are hard to reach especially during rain seasons due to poor infrastructures caused by heavy rains, unlike other part of Msd- Dar es salaam zone, kisarawe district influence heavy rains during rain seasons, with its poor infrastructures in many villages make it difficult for Msd to deliver medicine. (MSD, 2012)

Ensuring reliable and equitable access to safe, affordable and quality medicines in rural areas of Tanzania is key to the achievement of universal health coverage goal by 2030, therefore this study focus on the assessment of the role of Okigusuri system in medicine availability, accessibility and affordability in rural areas of Tanzania.

## **1.2 Statement of the Problem**

Access to affordable, quality and safely available medicine is the core factor to the contribution of universal health coverage.(Wirtz et al., 2017) in Tanzania, there is inadequate access to affordable medicine for primary health care in rural areas, according to Twaweza only 32% of Tanzanian have access to medicine (Wales et al., 2014) with a poor informed decision when it comes to health matter about 67.1% of villages people are illiterate when it comes to health.(Muhanga & Malungo, 2018) (Bell et al., 2013)

Tanzanian government has managed to increase accessibility of medicine through its function unit MSD by delivering medicines to dispensary levels in villages, but this isn’t sufficient enough to cover all remote areas, in the country, the problem as some villages have to work 5km to reach to primary health center/dispensary, also cost of the medicines remain to be a problem as many cannot afford , also lack of health insurance to all villagers to cover medical bills still hinders accessibility and availability of medicine in rural areas.(Piatti-Fünfkirchen & Ally, 2020).

WHO Tanzania regional office through ministry of health has helped in pricing of pharmaceuticals to have a fair and affordable price in the market,(World Health Organization, 2018), the East Africa community has harmonized the process of registration of medicines to easing availability of medicines in the market. (EAHP, 2016). If not controlled inadequate access to affordable medicines can lead to serious poor health problem in rural areas, which can result in economic burden in terms of reduced economic production as well as health financing burden. Hence results into poverty and economic dependence. (David, 2022). Some of the studies focus on availability, and distribution of medicines in the market and its price margin but not on adequate model to accommodate rural areas, there is urban bias, (Mujinja et al., 2014). It is therefore likely that Okigusuri model is a right health approach model to increase medicine accessibility, availability and affordability in Tanzania rural areas.

## **1.3 Objective of the Study**

# **1.3.1 Main Objective**

To assess the role of the Okigusuri System in Medicine Accessibility, Availability, and Affordability in Kisarawe District., Tanzania.

# **1.3.2 Specific Objective of the Study**

1. To examine the influence of Okigusuri system on the accessibility of medicines in rural areas.
2. To determine the influence of Okigusuri system on the availability of medicines in rural areas.
3. To asses the influence of Okigusuri system on the affordability of medicines in rural areas.
4. To assess the influence of Okigusuri system on self-medication capacity among Okigusuri members.

## **1.4 Research Questions**

# **1.4.1 General Research Question**

What is the role of Okigusuri system in medicine accessibility, availability, and affordability in rural areas of Tanzania?

# **1.4.2 Specific Research Questions**

1. How does Okigusuri system influence the accessibility of medicines in rural areas?
2. How does Okigusuri system influence the availability of medicines in rural areas?
3. How does Okigusuri system influence the affordability of medicines in rural areas?
4. What is the self-medication capacity among Okigusuri members?

## **1.5 Significance of the Study**.

To the community, this study assessed the community knowledge and awareness on the role of Okigusuri system in medicine accessibility, availability and affordability in rural areas of Tanzania

To the government, the study would help the ministry of Health to formulate better policy and strategies to improve access to affordable and safe medicine in rural areas, and promote equal access as well as health insurance to all.

To the researcher, this study was part of the fulfillment of the academic requirement for the award of Master of Arts in Monitoring and Evaluation. Also, it would assist other researchers on conducting the study of the same or related topic.

## **1.6 Scope of the Study**

The study was conducted to assess the role of Okigusuri system in Medicine availability, accessibility and affordability in rural area of Tanzania. The study was conducted at Bwama and Mlegele Villages in Kisarawe district Pwani region, the study was a village household-based where by household breadwinners of houses using Okigusuri and those which do not use Okigusuri were enrolled.

# **1.7 Limitation of the Study**

The researcher met obstacles in the whole process of interacting with respondents which were supposed to provide the data concerning the study. Some respondents were not willing to participate on providing the accurate information, to solve this challenge the researcher convinced the respondents and made them comfortable to cooperate fully in the study. Also the researcher faced the financial constraint, as far as it is a research work it needed some funds for transport and stationery activities.

# **CHAPTER TWO**

# **LITERATURE REVIEW**

## **2.1 Overview**

This chapter provides a literature review on different concepts related to the study which build the background of the study. It also provided the theoretical and empirical analysis of different literatures related to the study. In the end the chapter provide the conceptual framework and present the theoretical hypothesis of the study. In practice the hypothesis that will be presented underpins the assumption of the study.

## **2.2 Conceptual Definitions**

The key concepts used in the study are, Medicine accessibility, medicine availability, medicine affordability, Okigusuri system, and self-medication. Access to medicines refers to the reasonable ability for people to get needed/essential medicines required to achieve health/primary healthcare.

### **2.2.1 Medicine Accessibility**

The World Health Organization (WHO) has defined access to medicine as a person’s ability to continuously obtain an essential medicine that is available within a 1-hour walk at an affordable price from either a health facility or a medicine outlet. From a patient perspective, access to affordable, safe, effective, and quality-assured medicine is one of the most important determinants of healthcare quality and its delivery. (Toroitich et al., 2022). According to Okigusuri system in this study medicine accessibility refers to the reasonable ability for people (Okigusuri users) to get needed medicines required to achieve primary health care at zero distance i.e. available at ones household.

### **2.2.2 Medicine Availability**

Availability is the degree to which a medicine is present at distribution points in a defined area for the population living in that area at the moment of need.(WHO, 2016) Availability of medicines in rural areas we refer to the availability of essential medicines. According to the World Health Organization (WHO), “Essential medicines are those that satisfy the priority health care needs of the population. Essential medicines are intended to be available within the context of functioning health systems at all times in adequate amounts, in the appropriate dosage forms, with assured quality and adequate information, and at a price the individual and the community can afford. According to this study medicine availability is the percentage of essential medicine present in the medicine boxes necessary for treating primary health needs.

### **2.2.3 Medicine Affordability**

According to World health Organization, medicine affordability is Affordability is the degree to which a medicine is obtainable for those who need it at the moment of need, at a cost that does not expose them to the risk of serious negative consequences, such as not being able to satisfy other basic human needs.(WHO, 2016) . In this study medicine affordability referred to as the willingness and ability of Okigusuri users to pay for medicine consumed and payment done in a *use first pay later system.*

### **2.2.4 Okigusuri System**

*Okigusuri* is a compound of *oku* (to place) and *kusuri* (medicine).  Popularized more than 300 years ago during the Edo Period, in Toyama prefecture, it is a “use first, pay later” system for selling basic medications. (Sayama, 2019), It is a system wherein each household is asked to set a medicine box in their home which houses a variety of medicines, plus a reading health material, and a salesperson visits each household periodically, collects the fees for drugs that have been used, and replenishes those that are running low. (Toyama, 2018). Okigusuri system based on this study refers to us a health approach model that help primary healthcare services in rural areas in terms of medicines accessibility, availability and affordability.

### **2.2.5 Self-Medication**

Self-medication is defined as the selection and use of medicines by individuals (or a member of the individuals' family) to treat self-recognized or self-diagnosed conditions or symptoms. Several benefits have been linked to appropriate self-medication, among them: increased access to medication and relief for the patient, the active role of the patient in his or her own health care, better use of physicians and pharmacists skills and reduced (or at least optimized) burden of governments due to health expenditure linked to the treatment of minor health conditions. (Rägo, 2000) (Ruiz, 2010). In this study self-medication refers to the ability of Okigusuri box users to treat self-recognize minor health conditions using medicines available in Okigusuri boxes.

## **2.3 Theoretical review**

There are different underpin theories, hypothesis and models that are used to inform the accessibility of primary health care in rural areas, that lead to universal health coverage, these include, self-medication hypothesis which focus more on addiction of using certain drugs rather than the act of taking medication personally without being addict(Khantzian, 2017), affordability theory, service delivery theory, and the Malagasy traditional medicine theory, in this study we will only focus on the relevant theory, the Malagasy traditional theory.

### **2.3.1 Malagasy Traditional Medicine Theory**

According to the theory, Traditional Medicine improve the coverage of medical practices in remote areas national wise, the Malagasy traditional medicine theory was founded by Lucy Hoareau in 2009 in Madagascar. The theory has two assumptions, first the use of traditional medicines represents a more accessible therapeutical from an economic and geographical point of view, secondly there is transfer of medical knowledge in family level, traditional medical knowledge is passed on in a strict family setting direct lineage or by alliance. Generally, any sibling can holder this knowledge if he decides to receive it. Sometimes, a particular child is appointed to succeed the medicine man.(Pierlovisi & Pourchez, 2014). In this study the use of Malagasy traditional theory will help to provide feedback on how Okigusuri use can influence accessibility of medicine as well as self-medication knowledge transfer in family/household level.

## **2.4 Empirical Review**

### **2.4.1 Medicine Accessibility**

More than a billion people, mainly in low- and middle-income countries (LMICs), are unable to access needed health services as these are unaffordable. Achieving equitable universal health coverage requires the provision of accessible, necessary services for the entire population without imposing an unaffordable burden on individuals or households. A study conducted in South Africa on Inequities in access to health care (Harris et al., 2011), in this study they were examining access barriers to health care services, by exploring affordability, availability, and acceptability of services through a nationally representative household survey, using mult-stage sampling method, covering utilization, health status, (as measures of access), reasons for delaying care, perceptions and experiences of services, and health-care expenditure. Socio-economic status, race, insurance status, and urban-rural location were associated with access to care, with black Africans, poor, uninsured and rural respondents, experiencing greatest barriers. The study concluded that understanding access barriers from the user perspective is important for expanding health-care coverage, both in South Africa and in other low- and middle-income countries.

Another study was done by (Hetzel et al., 2007) by the ACCESS programme which aims at understanding and improving access to prompt and effective malaria treatment and care in a rural Tanzanian setting, the programme aim to fulfill few among the malaria control strategies promoted internationally and adopted by most endemic African countries, which is prompt access to effective treatment especially for young children and pregnant women features prominently, the study found that access to quality treatment is insufficient in many rural settings, with affordability and availability being among of the major factors that contribute to this situation, physical access may be impeded by long distances to the nearest point of care, inadequate logistics or inability to pay for secondary costs such as transport.

Former Director general of Tanzania Medicine and Medical devices (Sillo et al., 2020) did a study on “Coming together to improve access to medicines: The genesis of the East African Community’s Medicines Regulatory Harmonization initiative” in their study they focused on identifying factors that lead to the delay in new regime treatment for HIV (TDF), in their study they identified delays in regulatory filing and registration contributed to TDF being “virtually unavailable” in many African countries, and several important factors determine access to medicines, including treatment policy, pricing, and procurement, along with regulatory submission and approvals.(ibid),

The studies above showed focus on accessibility of medicine based on nearest primary healthcare and accessibility of medicine in the market but not in rural areas at a very close proximity, this study therefore focus on assessing accessibility of medicine in rural areas at a zero distance, home based approach using Okigusuri system.

**2.4.2 Medicine Availability**

(Kuwawenaruwa et al., 2020b) conducted a study on assessing the effects of medicine availability and stock-outs on healthcare utilization in Dodoma region, Tanzania a cross-sectional study that combined information from households and healthcare facility surveys was used. A total of 4 hospitals and 89 public primary health facilities were surveyed. In addition, 1237 households within the health facility catchment areas were interviewed. Descriptive analysis and multivariate logistic regressions models were used to assess the effects of medicine availability and stock-outs on utilization patterns and to identify additional household-level factors associated with health service utilization. The main analysis showed that household’s healthcare utilization was positively and significantly associated with continuous availability of all essential medicines, Healthcare utilization was positively associated with exposure to healthcare education.

The availability of medicines in public health facilities in Tanzania is problematic, Medicines shortages are often caused by unavailability at Medical Stores Department, the national supplier for public health facilities. (Wiedenmayer et al., 2019) this study was conducted by Jazia prime vendor system- a public-private partnership to improve medicine availability in Tanzania, in this study they aimed at complementing the national supply chain in case of stock-outs with a simplified, transparent and efficient procurement procedure based on a public-private partnership approach with a prime vendor at the regional level and to develop a successful pilot of a Prime Vendor system with the potential for national scale-up. A public-private partnership was established engaging one private sector pharmaceutical supplier as the Prime Vendor to provide the essential medicines needed by public health facilities in Tanzania findings from this study shows that In the pilot region, essential medicines availability increased from 69% in 2014 to 94% in 2018, and price of medicine is average as compared to that of medical store department.

The study conducted by (Mwencha et al., 2017) global health science and practice on Upgrading Supply Chain Management Systems to Improve Availability of Medicines in Tanzania, Evaluation of Performance and Cost Effects, found that the Investments in a national logistics management unit and electronic logistics management information system resulted in better data use and improvements in some, but not all, management practices, there is reduced stock-out rates and stock-out duration.

**2.4.3 Medicine Affordability**

A study conducted by (Ewen et al., 2017) on Prices and availability of locally produced and imported medicines in Ethiopia and Tanzania, the study adopted the WHO/Health Action International instruments measuring medicines availability and prices to differentiate local from imported products, then pilot tested in Ethiopia and Tanzania. Results from this study shows that The Ethiopian government paid more for local products (median MPR = 1.20) than for imports (median MPR = 0.84). The Tanzanian government paid less for local products (median MPR = 0.69) than imports (median MPR = 1.34). In the public sector, availability of local and imported products was 21% and 32% respectively, with patients paying slightly more for local products, and the price keep on increasing for both local and imported products in far rural areas.

Findings from the study conducted by (Cameron et al., 2019) on Medicine prices, availability, and affordability in 36 developing and middle-income countries: a secondary analysis, revealed that Treatments for acute and chronic illness were largely unaffordable in many countries, and Low procurement prices did not always translate into low patient prices this in turn leads to large share of the out-of-pocket payments faced by households in low- and middle-income settings with more effect in rural areas.

### **2.4.4 Self-medication**

People all over the world suffer common health problems (e.g. colds, headaches, digestive problems and muscle aches) in roughly the same frequency and respond in the same way to these problems. In 50% of the cases, they let the condition run its course or use a home remedy. In 25% of cases, they use non-prescription/OTC medications and the remaining 25% of cases visit a physician or use a prescription medicine previously obtained for the same condition. (Bennadi, 2014a), a study conducted in Egypt aimed to describe the prevalence, pattern and reasons for self-medication among adults in Alexandria, Egypt. In a community-based survey during 2012, a representative sample of 1100 adults completed a predesigned interview questionnaire on self-medication practices by drugs and complementary or alternative medicines (CAM). A majority of them practiced self-medication (86.4%), mostly using both drugs and CAM (77.5%). The most commonly used drugs were analgesics (96.7%), and cough and cold preparations (81.9%), but 53.9% of respondents reported self-medication with antibiotics. The major reasons for practicing self-medication were due to emergency use especially when symptoms started at odd hours and not being able to get medical advice (for financial or time reasons)(El-Nimr et al., 2015). **At community level** a good self-medication can also provide benefits such as, saving scarce medical resources from being wasted on minor conditions, lowering the costs of community funded health care programs, Some governments are increasingly encouraging self-care of minor illnesses, including self-medication. Although responsible self-medication help to reduce the cost of treatment, travelling time as well as doctor's time i.e., consultation time (Bennadi, 2014a)

## **2.5 Research Gap**

Many literature studies like (Hetzel et al., 2017a) (Tharumia Jagadeesan & Wirtz, 2021) and (Bansal & Purohit, 2013) explained different models for accessibility of medicines in primary health care in rural areas, but no methods that surplus the availability and affordability of medicine in rural areas. Also (Giaquinto et al., 2020) focus on the availability of medicines in the Africa market, but not in the end user/community, therefore this study will help to understand importance and sustainability of Okigusuri system as the unique model/system for medicine accessibility, affordability and availability in rural areas in Tanzania.

**2.6 Conceptual Framework**

According to the conceptual framework, the availability of Okigusuri Box in the household, will provide a given household with adequate accessibility to primary health care, since Okigusuri box will provide, accessibility to essential medicines, and make these medicine available at an affordable price for user to pay as well as provision of health education in each household. Medicine distribution inside which there is Medicine accessibility, medicine availability, medicine affordability and self-medication are the dependent variables, the independent variable is the Okigusuri system inside which we have Okigusuri box.

Figure 1.1 Okigusuri System Conceptual Frameworks.

**Dependent variable**

**Independent variable**

Medicine accessibility.

Medicine availability

Medicine affordability

Self-medication education

**Source;** Mongolian Traditional medicine Nippon model. 2010

# **CHAPTER THREE**

# **RESEARCH METHODOLOGY**

## **3.0 Overview**

This chapter explains methods which were used to conduct the study and how data were collected and analyzed. The chapter introduces the socio-demographic characteristics of the study area, sample and sampling procedures, data collection methods and tools, data analysis and presentation plan, limitations and ethical consideration.

## **3.1 Research Approach**

This study used a quantitative approach and document review for data collection and analysis to assess the role of okigusuri system in medicine accessibility, availability and affordability in rural areas. The method is easy to produce reliable and generalized results and easy to be analyzed by rigorous methods. (Creswell, 2014) .

## **3.2 Research Design**

The study used cross sectional research design to collect data from selected households with the Okigusuri box and the households without the Okigusuri box.

## **3.3 Study Area**

The study was conducted at Kisarawe District in Pwani region, specifically in two villages Bwama and Mlegele where Okigusuri project was implemented. The area was purposeful selected by the researcher since it only place where the Okigusuri project was taking place.

## **3.4 Study Population**

The population for this study included active households with Okigusuri boxes and selected households without Okigusuri boxes in Mlegele and Bwama villages.

## **3.5 Sample and Sampling Procedure**

### **3.5.1 Sample Size**

This study included a total of 140 responded where by 70 respondents were Okigusuri users and 70 respondents were non Okigusuri users. This sample size was calculated by using a rule of thumb of sample calculation, which states that a good maximum sample size is usually around 10% of the population, as long as this does not exceed 1000, For the large population minimum sample size 100 and for small population minimum sample size is 20 to 50.(Burmeister & Aitken, 2012).

### **3.5.2 Sampling Procedure**

In establishing the optimal sample size, the researcher used a probability sampling design, The method is referred to as purposefully crafted social experiment under which participation in the experiment and the randomly determined program participation assignment of participants in the experiment are per the design of an evaluator for the purpose of evaluating the impact of that program (Lance et al., 2014). A list of household beneficiaries with Okigusuri system was obtained and Okigusuri box number was assigned to each beneficiary excel sheet was used to random select 70 households of beneficiaries , for non-users a list of village households were obtained from village executive officer, excel was used to randomly select 70 households.

## **3.6 Unit of Analysis**

Unit of analysis for this study was the household. The end target of Okigusuri system is the placement of Okigusuri box in the households. In this study household refers to a house with or without Okigusuri box,

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## **3.7 Data Collection Method and Tools**

Questionnaires, and document review were used to collect data from respondent.

**3.7.1 Questionnaires Tool**

A semi structured questionnaire comprises of both open and close ended question was administered to selected households’ members with the Okigusuri box and the households’ members without the box.

## **3.8 Data Analysis**

The collected data were stored and analysed using Statistical Package for Social Science (IBM SPSS Statistics) version 26. For this study, data were analysed, according to the theme of specific objectives using descriptive and inferential analysis. In descriptive analysis data were analysed using frequency and cross tabulation and results were presented in charts, mean, standard deviation, and percentages. Mean and percentage were used to analyze different demographic characteristics of the study, To identify the trend and relationship between Okigusuri system and medicine availability, affordability and appropriate self-medication in rural areas, Correlation and bivariate Regression Analysis was used to identify relationship between variables.

Cross tabulation between availability of medicine in the dispensary/home/pharmacy and household Okigusuri status was done to identify satisfaction of villagers with medicine availability in their community, frequency distribution table was used to identify drivers for adequate and limited availability of medicine in rural areas, person correlation was used to identify the relationship between medicine availability and Okigusuri use, also regression analysis was conducted to express the variations of Okigusuri System on appropriate self-medication, also an independent t-test was conducted between willingness to pay medical bills against household using and not using Okigusuri system , comparing their mean differences.

## **3.9 Validity and Reliability of Data**

### **3.9.1 Validity of Data**

In this study, a questionnaire pre-testing was employed to elucidate and purify the meaning of questions to be clearly understood. The researcher formulated a questionnaire that was specifically tailored to obtain relevant and accurate response from the population. The research instrument was then piloted with 10 respondents randomly selected from the target population. On the basis of their comments, changes were made to the questionnaire to clarify wordings and increase readability. The pre-testing procedure was important to establish content validity.

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## **3.9.2 Reliability of Data**

In this study, the issue of reliability was ensured by use of different data collection methods such as review of secondary data and tools such as questionnaires and interview with appropriate sample size and techniques which are in this case are random and purposive sampling. To ascertain the reliability, the researcher used a test-retest method during the pilot survey and back-check of the questionnaire.

## 

## **3.10 Ethical Considerations**

Researcher before going to the field for the data collection obtained research clearance permit from the Open University of Tanzania. The permit helped researcher to obtain authority and get permission from Kisarawe district office to collect data at Bwama and Mlegele village. Before the interview, the researcher requested consent from the participants and made clear that participation in the study is voluntary and the participants has the right to terminate their participation at any time. The researcher entered and store data in protected computer. The researcher ensured the protection of participants’ confidentiality by not including their names in the report.

# **CHAPTER FOUR**

# **DATA PRESENTATION AND DISCUSSION OF THE FINDINGS**

## **4.1 Introduction**

This chapter analyses, present and discusses findings of the study about “The role of the Okigusuri system in medicine accessibility, availability, affordability in Kisarawe District. The results are presented on tables, where frequency, percent, valid percent and cumulative are shown. The response rate, characteristics of respondents and findings from 70 households using Okigusuri and 70 households which do not use Okigusuri, from Mlegele and Bwama villages in Kisarawe district. Frequency distribution is used to organize data and to give meaning which enable the table to be drawn using SPSS software.

## **4.2 Social-demographic Characteristics of Respondents**

This study collected information from respondents with respect to age, education level, occupation status, economic status, gender, and position. It was found to be important to capture data on demographic information of respondents for the implication of this study.

### **4.2.1 Age Groups of Respondents**

Age distribution of respondent was grouped intothree sets, different age groups might have distinct healthcare needs, Younger adults might seek preventive care or services related to family planning, while older adults might require more frequent health monitoring or chronic condition management it is also important to consider this age variation and their effect on role of Okigusuri in medicine accessibility, availability, and affordability in rural areas in kisarawe district, as indicated in a Table 4.1

Table 4.1 Distribution of Respondents by Age Groups (n=140)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Age group** | **Frequency** | **Percent** | **Valid Percent** | **Cumulative Percent** |
| 18-35 Yrs. | 47 | 33.6 | 33.6 | 33.6 |
| 36-55 Yrs. | 73 | 52.1 | 52.1 | 85.7 |
| 56-80 Yrs. | 20 | 14.3 | 14.3 | 100.0 |
| **Total** | **140** | **100.0** | **100.0** |  |

**Source;** Field data 2023

The distribution of respondents by age groups, as depicted in Table 4.1, provides a comprehensive overview of the study's participant demographics. Among the total sample size of 140 respondents, 33.6% of respondents are aged between 18 to 35 years. This group represents a significant portion of young adults and possibly includes individuals who are starting their careers, pursuing higher education, or forming families, their also main breadwinner who tries multiple activities to earn money. 52.1% of respondents are aged between 36 to 55 years. This is the largest age group and likely includes individuals in the prime of their working years, most of them are raising families and planning for their future retirement.

While 14.3% of respondents are aged between 56 to 80 years. This is the smallest age group and typically includes older adults, potentially nearing retirement or already retired. The findings regarding the age distribution of the surveyed respondents provide a valuable insight into the demographic makeup of the population. Understanding the different age groups is essential for tailoring policies, services, and initiatives that cater to the unique needs and aspirations of individuals living in Bwama and Mlegele villages, this knowledge can contribute to the development of more effective and inclusive community programs and policies.(Law et al., 2020)

### **4.2.2 Gender of Respondents**

The gender of the respondents provides a significant lens through which to examine the demographic characteristics of the study participants in relation to their potential roles and responsibilities within the context of role of Okigusuri in medicine accessibility, availability and affordability in rural areas. Table 4.2 shows the distribution of respondents by gender status;

Table 4.2 Distribution of respondents by Gender. (n=140)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Gender** | **Frequency** | **Percent** | **Valid Percent** | **Cumulative Percent** |
| Male | 60 | 42.9 | 42.9 | 42.9 |
| Female | 80 | 57.1 | 57.1 | 100.0 |
| **Total** | **140** | **100.0** | **100.0** |  |

**Source;** Field Data 2023.

The findings revealed that majority of the respondents were women 57.1%, as they are the major responsible for family’s well-being and being in-charge of the Okigusuri box, while 42.9 % was reported to be men. These distributions underpin the importance of considering gender status as a potential influence on the role of Okigusuri system in medicine accessibility, availability and affordability in rural areas. Health seeking behavior or health knowledge, seeking behavior can also be explained between men and women of kisarawe district through this distribution. The findings regarding gender distribution among the respondents highlight the importance of recognizing and addressing gender-specific needs within the surveyed population. Understanding the gender demographics is crucial for developing inclusive policies, healthcare initiatives, and social programs that cater to the diverse requirements and challenges experienced by both males and females.(Nielsen et al., 2021)

### **4.2.3 Level of Education Attained by Respondents**

The educational background of the respondents forms a crucial aspect of the study's exploration, shedding light on the diverse knowledge and perspectives present within the sample from Kisarawe district. Table 4.3 shows the distribution of respondents by education level attained.

Table 4.3 Distribution of Respondents by Education Level (n=140)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Education Level** | **Frequency** | **Percent** | **Valid Percent** | **Cumulative Percent** |
| Never gained primary education | 10 | 7.1 | 7.1 | 7.1 |
| Primary | 114 | 81.4 | 81.4 | 88.6 |
| Secondary | 14 | 10.0 | 10.0 | 98.6 |
| College | 2 | 1.4 | 1.4 | 100 |
| **Total** | **140** | **100** | **100** |  |

**Source;** Field data 2023

The distribution of respondents by education level, as depicted in Table 4.3, provides valuable insights into the educational diversity of the study participants. Among the total sample of 140 respondents, the majority possess primary education, constituting 81.4% of the sample. This suggests a substantial proportion of participants with a basic/foundational level of education, which can influence their understanding of health-related matters such as self-medication and medicine accessibility. Additionally, 10% secondary education, further enhancing the pool of individuals with higher foundation education level. Respondents with higher education/college account for 1.4%, indicating a presence of few individuals with potentially formal and advanced knowledge that can have influence in Okigusuri use and its role in medicine availability, affordability and accessibility in rural areas especially in appropriate self-medication. With 7.1% not having primary education, it's evident that a need for further awareness of necessary of having basic education is important in the community. This distribution underscores the importance of considering the diverse educational perspectives when assessing the role of Okigusuri system in medicine accessibility, availability and affordability in rural areas in Kisarawe district.

### **4.2.4. Households’ income level**

The average monthly income level of the respondents forms an important aspect in this study as the unit of analysis of this study is household, as well as the end target of Okigusuri system is the presence of the Okigusuri box in the individual’s households, hence it is of paramount important to collect information on the household income for better understanding socioeconomic status of the people in Kisarawe district. As depicted in table 4.4 below.

Table 4.4 Distribution of Respondents by Households’ income Level (n=140)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Monthly Income (Tshs)** | **Frequency** | **Percent** | **Valid Percent** | **Cumulative Percent** |
| 30k-100k | 81 | 57.9 | 57.9 | 57.9 |
| 110k-490k | 54 | 38.6 | 38.6 | 96.4 |
| Above 500k | 2 | 1.4 | 1.4 | 97.6 |
| None | 3 | 2.1 | 2.1 | 100.0 |
|  | **140** | **100.0** | **100.0** |  |

**Source**; Field data 2023

The researcher wanted to know the respondent household’s income level and asses the relationship in health/medication expenditure and affordability of medical bills. The income level was measured in Tanzania Shillings (Tshs), and it was grouped into four groups, low income, middle, Higher income level and a group with those who claimed to have no any monthly income where thresholds were selected depending on the population under study. From the table 4.4 above among 140 respondents majority of them about 57.9% of respondents were reported to have a household income range of 30,000 to 100,000 Tshs which account for the low income group, Individuals in this income group may face challenges in meeting their daily needs, including food, housing, and healthcare expenses. About 38.6% of respondents reported to have a household income level of 110,000 to 490,000Tshs, People in this category may have more financial stability but still need to manage their budgets carefully. where by only 1.4% of the respondents were reported to have a household income level of 500,000 Tshs and above. Individuals in this income group may have more financial resources available for savings or investments. A minority of respondents, about 2.1%, report having zero monthly income. This indicates that they may rely on support, assistance, or may be currently unemployed or underemployed, and most of this survey group with this response were elder people. Individuals with lower incomes may face financial challenges, including difficulty in accessing healthcare, education, and housing.(Roberts et al., 2020) Addressing the needs of this group is important for poverty alleviation. In conclusion the findings on income distribution demonstrate the economic diversity within Bwama and Mlegele villages, with varying income levels ranging from low to moderate to relatively affluent. These findings have significant implications for policy-making, social support programs, and economic development initiatives. Understanding the income distribution can guide efforts to address income disparities, promote economic inclusion, and provide targeted assistance to individuals and families based on their specific income needs.(Sultana et al., 2017)

### **4.2.7 Health Insurance**

Health insurance and its coverage is an important factor to assess its impact on various health related outcomes, table 4.7 provide distribution of respondent by health insurance and type of health insurance in Mlegele and Bwama villages.

Table 4.5 Distribution of respondents by health insurance

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Health Insurance** | **Frequency** | **Percent** | **Type of Insurance** | **Percent** |
| With insurance | 58 | 41.4 | NHIF | 5.17 |
| Private | 94.83 |
| Without insurance | 82 | 58.6 | - | - |
| **Total** | **140** | **100** |  | **100** |

**Source;** Field data 2023.

Findings revealed that 1 to 3 household members of about 41.4% of respondents reported having health insurance. This implies that a significant portion of the surveyed population has some form of health insurance in place. Of this percentage, 5.17% have NHIF (National Health Insurance Fund), a government-backed health insurance program in Tanzania. The majority, 94.83%, have private health insurance. Private health insurance can be provided by various insurance companies and typically offers a wider range of coverage options compared to public programs like NHIF, in this study a private insurance reported was PLAN INTERNATIONAL Health insurance. About 58.6% of respondents reported having no health insurance, indicating that a substantial portion of the population lacks any form of insurance coverage.

The fact that 58.6% of respondents have no health insurance is a significant concern. Lack of health insurance can result in financial burdens when accessing healthcare services. Individuals without insurance might be more likely to delay or forego necessary medical care due to cost concerns, potentially impacting their health outcomes.(Hayes et al., 2015). Understanding the distribution of health insurance coverage is crucial for policymakers to address gaps and develop strategies for universal health coverage, as with the current Tanzania health policy of insurance to all people.

### **4.2.8 Respondents’ Residence**

The respondent’s residence forms a crucial aspect of the study's exploration, providing the diverse geographical distribution and perspectives present within the sample from Kisarawe District. Table 4.8 shows the distribution of respondents by residence.

Table 4.6 Distribution of Respondents by Residence.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Respondent Residence** | **Frequency** | **Percent** | **Valid Percent** | **Cumulative Percent.** |
| BWAMA | 55 | 39.3 | 39.3 | 39.3 |
| MLEGELE | 85 | 60.7 | 60.7 | 100 |
| **Total** | **140** | **100.0** | **100.0** |  |

**Source;** Field data 2023

The distribution of respondents by residence as depicted by table 4.8 provide statistics that can offer insights into the demographic distribution within the surveyed population.

**Bwama Village (39.3%)** The population residing in Bwama comprises a significant, though somewhat smaller, portion of the respondents. Demographic characteristics, lifestyle, access to resources, and healthcare services within Bwama might differ from those in Mlegele.

**Mlegele Village (60.7%)** The larger majority of respondents reside in Mlegele, indicating it is the more populated or prevalent village among the surveyed individuals. The larger percentage might imply greater diversity or represent a broader demographic within the study.

The findings about the distribution of respondents between Bwama and Mlegele villages provide crucial insights into the demographic makeup of the surveyed population. Understanding these differences is pivotal for designing effective health interventions, allocating resources, and implementing policies that cater to the specific needs of each community. (Anselmi et al., 2015)

## **4.3 Medicine Availability**

Evaluating the role of Okigusuri in medicine availability in rural areas stands as a significant objective within this study, aimed to understand the satisfaction of medicine availability among villagers, where do they get medicine in times of need, and factors that contribute to easiness and difficultness medicine availability in the village, as well as medicine reserved/available at households in Bwama and Mlegele villages in Kisarawe district. Medicine availability satisfaction was cross tabulated with household using and not using Okigusuri. Table 4.9 shows the distribution of respondents;

Table 4.7 Crosstabulation medicine availability vs households Okigusuri status.

|  |  |  |  |
| --- | --- | --- | --- |
| **Medicine Availability Satisfaction** | **Okigusuri User** | **Non Okigusuri User** | **Total** |
| Very easy | 37.1% | 0.00% | 18.6% |
| Easy | 37.1% | 0.00% | 18.6% |
| Neither easy nor Difficult | 0.00% | 17.1% | 8.6% |
| Difficult | 21.4% | 77.1% | 49.3% |
| Very difficult | 4.3% | 5.7% | 5.0% |

**Source;** Field data 2023.

## **4.3.1 Satisfaction with medicine availability**

From table 4.9 above Findings revealed that 37.1% of respondents using the Okigusuri box reported being satisfied with medicine availability where they found it very easy for medicine availability in the village, another group 37.1% also found it easy and being satisfied with medicine availability. This indicates that a majority of Okigusuri box users find it convenient and effective in providing them with the medicines they need, on the other hand none of the respondents without Okigusuri box were not satisfied with the medicine availability. In contrast, non-Okigusuri users are experiencing significant challenges in obtaining medicines. None of them are satisfied with medicine availability, and a large majority (77.1%) find it difficult to get the medicines they require. This indicate that Okigusuri system, might play a crucial role in facilitating availability of medicines, potentially through improved distribution channels that is homebased medicine placement, which is not present or as effective for non-Okigusuri users. Some scholars(Yaya et al., 2017) urge that the disparities in healthcare infrastructure, economic constraints, and geographic isolation as significant contributors to the lower satisfaction levels regarding medicine availability in rural areas. Efforts, such as telemedicine, mobile clinics, and community health initiatives, might be referenced as potential solutions to improve medicine access and satisfaction in these regions.(Alhozgi et al., 2021)

### **4.3.2 Major Source of Medicine**

A notable finding is that 90.5% of Okigusuri users mentioned the Okigusuri box as their major source of medicine. This suggests that the Okigusuri box plays a crucial role in ensuring medicine availability for this group. In contrast, 72% of non-Okigusuri users mentioned the pharmacy as their major source of getting medicine. It's interesting to note that a significant portion of non-Okigusuri users still rely on pharmacies despite being located far away and cost of medicine being high. This may indicate that they have limited access to alternatives for obtaining medicines. Additionally, 12% of non-Okigusuri users mentioned hospitals as their source of medicine, hospitals are generally not the primary source of obtaining routine medications,(Chowdhury & Chakraborty, 2017) so this could indicate that these respondents have to resort to hospitals due to limited options. The Okigusuri box appears to have a positive impact on medicine availability and satisfaction among users. This suggests that such a rural health approach systems could be a solution to improve availability and access to medicines, especially for those who may face challenges accessing traditional pharmacies. This aligns with the literature on the growing use of technology in healthcare, such as automated medication dispensing systems, to enhance patient adherence and medication access(Chisholm-Burns et al., 2010)

### **4.3.2 Drivers for Easiness in Medicine Availability**

Drivers for easiness satisfaction of villagers with medicine availability forms a pivotal aspect of this study, as it delves into the dissemination and comprehension of information for individual with and without Okigusuri box who are satisfied with medicine availability in their villages. Table 4.10 present the distribution of respondent.

Table 4.8 Distribution of respondent on easiness of medicine Availability.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Reasons** | **Frequency** | **Percentage** | **Valid Percent** | **Cumulative Percentage** |
| Pharmacy located near-by | 1 | 2.3 | 2.3 | 2.3 |
| Left over stock in the house | 2 | 4.7 | 4.7 | 7 |
| Essential medicines are available at dispensary | 1 | 2.3 | 2.3 | 9.3 |
| Okigusuri Box | 39 | 90.7 | 90.7 | 100 |
| **Total** | **43** | **100.0** | **100.0** |  |

**Source**; Field data 2023  **4.3.3 Easiness of Medicine Availability due to Okigusuri Box**

This high satisfaction rate 90.7% suggests that the Okigusuri box is a reliable and effective means of ensuring medicine availability. It aligns with the idea that automated medication dispensing systems, like the Okigusuri box, can enhance availability and access to medication, especially in situations where traditional healthcare infrastructure may be lacking or inaccessible. Studies have shown that telemedicine and telepharmacy solutions, including automated dispensing systems, can improve patient adherence and health outcomes by providing convenient access to medications.(Nduka et al., 2023).

**4.3.4 Easiness of Medicine Availability due to Leftover Medicine Stock**

While this 4.7% of respondent reported is relatively low compared to Okigusuri box users, it's worth noting that some individuals rely on existing medicine supplies within their homes. This may indicate a degree of self-sufficiency in managing their healthcare needs. Proper management of leftover medicines is essential to ensure their safety and effectiveness(Whitacre, 2020). Educating individuals on the safe use and disposal of leftover medications is crucial.

**4.3.5 Easiness of Medicines Availability due to pharmacy being located near-by and due to available medicines at the village dispensary**

The smaller percentages 2.3% attributing ease of access to nearby pharmacies or dispensary availability suggest that while the Okigusuri box plays a dominant role, there are still other existing means contributing to the accessibility of medicines for a minority of users. This might imply that multiple avenues can enhance medicine availability, but the Okigusuri box significantly stands out as the primary facilitator for the vast majority of users, in Bwama and Mlegele villages. Pharmacy and dispensaries in rural areas also serve as centers for health education, Pharmacists and healthcare professionals can educate the community about preventive measures, proper medication usage, and general health practices, thus promoting health awareness and disease prevention.(Kebede et al., 2021)

### **4.3.6 Drivers for limited/difficult Availability of Medicine**

Assessing reasons for difficultness availability of medicines and the reasons for villagers not being satisfied with medicine availability in their community, provide a crucial point for understanding the role of Okigusuri in Medicine Availability. Table 4.11 present the distribution of respondents.

Table 4.9 Distribution of respondent by difficultness on medicine availability

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Reasons** | **Frequency** | **Percent** | **Valid Percent** | **Cumulative Percent.** |
| Pharmacy lacks essential medicines | 19 | 19.6 | 19.6 | 19.9 |
| Essential medicines are expensive | 11 | 11.3 | 11.3 | 30.9 |
| Pharmacy is located far | 10 | 10.3 | 10.3 | 41.2 |
| High Transport fee | 12 | 12.4 | 12.4 | 53.6 |
| All of the above | 45 | 46.4 | 46.4 | 100 |
| **Total** | **97** | **100** | **100** |  |

**Source;** Field data 2023.

A significant proportion of respondents, 46.4%, reported their dissatisfaction with medicine availability in rural areas due to expensive medicines in the pharmacy, pharmacy being located very far, pharmacy and dispensaries lack essential medicines and high transport fee. This suggests that the cost of medicines may be a significant barrier for many individuals living in rural areas. High medicine prices can limit access to essential healthcare, especially for people with limited financial resources.(Olasehinde & Olaniyan, 2017) It may be important for policymakers and healthcare providers to explore ways to make medicines more affordable and accessible in rural areas. The findings also indicate that both pharmacies and hospitals at Bwama and Mlegele villages frequently experience essential medicine stockouts, a total of 46.4% of respondents expressed dissatisfaction due to this issue. Insufficient stock of essential medicines in both healthcare facilities can lead to delayed or inadequate treatment, which can have serious health implications.(Kuwawenaruwa et al., 2020a) Addressing stockout issues by optimizing supply chain management, ensuring regular restocking, and improving inventory management could enhance medicine availability.(Leung et al., 2016)

### **4.3.7 Medicine available at home**

Exploring type of medicine stocked/ available at households provide a significance point in this study to provide an insight into specific health need for the specific community of people in kisarawe district, and to account for the availability of medicines in the individual household. Table 4.12 present the crosstabulation of Households status (Okigusuri user/non-Okigusuri user) and medicine available at home.

Table 4.10 Crosstabulation Household Okigusuri status and medicine availability.

|  |  |  |  |
| --- | --- | --- | --- |
| **Available Medicine** | **Okigusuri User** | **Non Okigusuri User** | **Total** |
| Antipain/Analgesic | 21.4% | 1.4% | 11.4% |
| Anti-allergy | 4.3% | 0.0% | 2.1% |
| Antifungal | 4.3% | 0.0% | 2.1% |
| Antibiotics | 1.4% | 0.0% | 0.7% |
| Antihelminthetic | 10.0% | 0.0% | 5.0% |
| Cough mixtures | 14.3% | 0.0% | 7.1% |
| Analgesic + Antifungal + Antiallergy | 32.9% | 0.0% | 16.4% |
| **None** | **11.4%** | **98.6%** | **55.0%** |

**Source;** Field Data 2023

**4.3.8 Medicine Availability in Non-Okigusuri User Households**

According to the findings, a majority of non-Okigusuri users, specifically 98.6%, did not have any medicines in their households. This implies that a very small percentage of non-Okigusuri users had medicines readily available in their homes. In Mongolia households without family kit were having inadequate availability and accessibility to medicines (Ulaanbaatar, 2017)

**4.3.9 Medicine Availability in Okigusuri User Households**

In contrast, a substantial proportion of Okigusuri users, accounting for 88.6% of respondents, reported having medicines in their households. This is a striking contrast to non-Okigusuri users and indicates that the presence of Okigusuri boxes might be linked to greater medicine availability at home. The assurance availability of medicine in Okigusuri user household is due to a Japanese health approach that ensure zero accessibility and availability of essential medicine any time. (Sayama, 2019)

**4.3.10 Types of Medicines in Okigusuri User Households**

It is interesting to note that among Okigusuri users, the most prevalent types of medicines available at home were analgesics, antifungal medications, and antiallergics. This information suggests that Okigusuri users tend to stock specific types of medicines, possibly those they anticipate needing for common health issues like pain relief, fungal infections, or allergies. These findings indicate that the Okigusuri system might have a significant impact on medicine availability in households. Okigusuri users are more likely to have medicines readily available, potentially improving their ability to address common health concerns promptly. The types of medicines mentioned also provide insight into the specific health needs or concerns of this user group. (Kajeguka & Moses, 2017) on this study majority of households found preferring to stock analgesics/antipain medicines 71% than any other medication.

### **4.3.11 Correlation Medicine availability**

The researcher wanted to observe the relationship between medicine availability and use of Okigusuri, the researcher hypothesized that the increase in Okigusuri use increase availability of medicines, the researcher used correlation coefficient to test the hypothesis. Table 4.13 below shows correlation coefficient.

Table 4.11 Correlations Household Okigusuri status versus Medicine availability

**Correlations**

|  |  |  |  |
| --- | --- | --- | --- |
|  | | **Medicine Availability** | **Household Okigusuri status** |
| **Medicine Availability** | Pearson Correlation | 1 | .722 |
| Sig. (2-tailed) |  | .000 |
| N | 140 | 140 |
| **Household Okigusuri status.** | Pearson Correlation | .722 | 1 |
| Sig. (2-tailed) | .000 |  |
| N | 140 | 140 |

\*\*Correlation is significant at the 0.01 level (2-tailed)

**Source** Field data 2023.

Positive Pearson Correlation A Pearson correlation coefficient of .722 suggests a strong positive relationship between the two variables, which, in this case, are the presence of Okigusuri boxes in households and the availability of medicines. A correlation coefficient of +1 would indicate a perfect positive relationship, while 0 would indicate no relationship, and -1 would indicate a perfect negative relationship. A coefficient of .722 is relatively high and indicates a substantial positive association.(Sedgwick, 2012).

Statistical Significance The probability value (p-value) of .000 is stated, and it's mentioned that this value is below the conventional significance level of P < 0.05. This means that the relationship between the presence of Okigusuri boxes and the availability of medicines is statistically significant.(Netsereab et al., 2018).

Hypothesis Supported The findings support the hypothesis that the availability of Okigusuri boxes in households has a positive impact on the availability of medicines. This aligns with the intuitive expectation that a rural medicines health approach, such as Okigusuri, can influence the presence of medicines in households. (Rangari et al., 2020). The findings suggest that Okigusuri system may offer a convenient way for individuals to access and procure medicines, which could explain the positive correlation. The convenience of having medicines readily available in the home might encourage more people to keep a supply of essential drugs. (Anwar et al., 2015).

## **4.4. Medicine Accessibility**

Focusing on the second specific objective of the role of Okigusuri system in medicine accessibility, this crucial outcome was assessed by considering several factors in Bwama and Mlegele village, the name and distance of the nearest dispensary, transport means and transport time, transport costs, waiting time and consultation time.

### **4.4.1 Proximity of Dispensaries**

Findings revealed that Masanganya dispensary was the nearest dispensary from Mlegele Village which was reported to be 6km away from the village center while Mwanzomgumu was reported to be the nearest dispensary from Bwama village and it was reported to be 10km from Bwama center. This information is crucial, as it highlights the distances people have to travel to access healthcare services. It also raises questions about the distribution of healthcare facilities and whether these distances are reasonable or pose barriers to healthcare access. The considerable distance to the nearest dispensaries may require initiatives to increase access, such as mobile health clinics or transportation subsidies,(Quattrochi et al., 2020) this puts Okigusuri as the right system for easy access of medicine.

### **4.4.2 Mode of transport and travel time**

According to findings as depicted by table 4.13 findings revealed that, 92.1% of the respondents reported using motorcycles as their primary means of transport. This suggests that motorcycles are the dominant mode of transportation for the Bwama and Mlegele community that it applied to both Okigusuri users and non-users. Interestingly, 5.7% of respondents reported traveling by foot to access medicine. This might indicate that a small but notable percentage of the population does not have access to motorcycles or other motorized forms of transport, possibly due to economic or geographical constraints.

Table 4.12 Distribution of respondents by transport means

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Transport Means** | **Frequency** | **Percent** | **Valid percent** | **Cumulative Percent** |
| Foot | 8 | 5.7 | 5.7 | 5.7 |
| Motorcycle | 129 | 92.1 | 92.1 | 97.9 |
| Car | 3 | 2.1 | 2.1 | 100.0 |
| **Total** | **140** | **100.0** | **100.0** |  |

**Source;** Field data 2023

Motorcycle users reported an average traveling time of 15 minutes, while those traveling on foot reported an average time of 1 hour and 30 minutes. This indicates a substantial difference in the time required to access healthcare based on the mode of transport, long travel times on foot can be physically demanding and may discourage some individuals from seeking timely medical care. (Brown et al., 2019)

### **4.4.3 Mean Transport Cost**

The mean transport cost was reported to be 3750 Tanzanian shillings this provides insights into the financial burden of accessing healthcare for individuals in Bwama and Mlegele villages. It's essential to consider this cost in the context of the local economy and income levels, as it can significantly impact people's ability to access medical care.(Sultana et al., 2017). The cost of transportation and long travel times on foot may be financial and physical barriers that hinder people from seeking medical care in a timely manner,(Binyaruka & Borghi, 2022) this wasn’t the case for the Okigusuri users as they have medicine in timely manner no need for transport cost to access medicine.

### **4.4.4. Waiting Time and Consultation Time**

The mean waiting time was reported to be 46.57 minutes which suggests that, on average, patients spend nearly an hour waiting to receive medical attention. This waiting time is an important aspect of the overall healthcare experience and can affect patient satisfaction and the perceived quality of care. While the mean consultation time was reported to be 15.43 minutes which represents the average duration of medical consultations. This information can be used to assess the efficiency of healthcare services and whether healthcare providers have sufficient time to address patients' needs adequately. The Study (Binyaruka & Borghi, 2022) conducted in Pwani region found that most patients (71%) accessed care on foot, The use of car, motorcycle or bicycle to access care was pro-rich while travelling on foot was pro-poor, The average waiting time and consultation time were 46.7 minutes and 12.9 minutes, respectively. The poorest and rural patients faced substantial time burden to access health care (travel and waiting) but incurred less transport and medical costs compared to their counterparts. The findings have similarity with our study, but a slightly difference is seen on major means of transport as in our study Motorcycle was reported to be major means of transport to access medical care in both villages.

## **4.5 Self Medication capacity**

Assessing the role of Okigusuri system in improving health education and knowledge to communities in Bwama and Mlegele villages, this third specific objective constitute a pivotal component of this study, it aimed at knowing appropriate self-medication capacity among members, by identifying, source of information concerning medicine dosage, type of medicines they usually prefer to stock at home, if they do seek for consultation to manage their common illness and who do they address at first. Table 4.15 present the relationship between Decision making on health condition in the household with comparison between Okigusuri user and non-users.

Table 4.13 Crosstabulation Decision making on bad health condition and Households Okigusuri status

|  |  |  |  |
| --- | --- | --- | --- |
| **Decision Making on Health Conditions** | **Okigusuri User** | **Non Okigusuri User** | **Total** |
| Okigusuri manager | 20.0% | 15.7% | 17.9% |
| Myself | 44.3% | 24.3% | 34.3% |
| Friends/Neighbors | 0.0% | 14.3% | 7.1% |
| Healthcare workers | 28.6% | 45.7% | 37.1% |
| Spouse + Children | 2.9% | 0.0% | 1.4% |
| Spouse +Okigusuri manager | 4.3% | 0.0% | 2.1% |

**Source;** Field data 2023.

**Self-Medication**

Among Okigusuri box users, 44.3% were able to self-medicate themselves without consultation. This suggests that a significant portion of Okigusuri box users feel confident and capable of managing their own common illness and medication needs without the direct intervention of healthcare professionals. In contrast, only 24.3% of non-Okigusuri box users were able to self-medicate. The fact that a significant percentage of Okigusuri box users can self-medicate implies that Okigusuri system is providing valuable information and resources to users, empowering them to take control of their health. Some communities, programs and some government are increasingly encouraging self-care of minor illnesses, including self-medication, (Kayalvizhi & Senapathi, 2013) although responsible self-medication help to reduce the cost of treatment, travelling time as well as doctor's time i.e consultation time, Some scholar still find self-medication as the pose challenging factor for major causes of microbial resistance and other diseases (Bennadi, 2014b)

**Consultation with Okigusuri Managers**

20% of Okigusuri box users consulted Okigusuri managers for medication information. This suggests that these individuals trust the Okigusuri box managers as a source of healthcare guidance and information. Okigusuri managers may provide valuable assistance in choosing and using medications effectively.(Toyama, 2018)

Among non-Okigusuri box users, only 11% consulted Okigusuri managers. This could be because Okigusuri managers are primarily associated with the service, and non-users may not be aware of or have access to this resource.

**Consultation with Healthcare Workers**

28.2% of Okigusuri box users consulted healthcare workers for medication information. These individuals still value the expertise and guidance of healthcare professionals, even while using Okigusuri boxes. In contrast, 52.1% of non-Okigusuri box users consulted healthcare workers for medication information. This is a higher percentage, indicating that non-users are more reliant on traditional healthcare sources for medication information. The majority of both Okigusuri box users and non-users prefer consulting healthcare workers for medication information.

This highlights the trust people have in medical professionals and their expertise. CHWs have an in-depth understanding of health, including its social determinants, and are responsible for a wide range of activities. Literatures urge that trust-based relationships with rural communities, an altruistic motivation to serve rural people, and sound health knowledge and skills are the most important factors facilitating successful implementation of the CHW program in most rural areas. (Javanparast et al., 2011).

These findings suggest that Okigusuri boxes play a role in increasing self-medication rates among users, possibly due to their convenient access to medication information. Users also appear to trust Okigusuri managers as a source of information, though a significant portion still values healthcare workers as their primary source of guidance thus the findings indicate the importance of continued health education and information dissemination through both health approaches like Okigusuri boxes and traditional healthcare channels to help individuals make informed decisions about their health. (Kim, 2019).

### **4.5.2 Appropriate self-medication; Drug dosage information and administration**

The research wanted to predict the strength relationship between the use of Okigusuri and appropriate self-medication, Hypothesis that there is a significance impact of Okigusuri use on appropriate self-medication. Table 4.16 present summary regression results.

Table 1:4.13 Crosstabulation Decision making on bad health condition and Households Okigusuri status

#### **4.14 Summary Regression Results**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Hypothesis** | **Regression weight** | **Beta coefficient** | **R2** | **F** | **P-Value** | **Hypothesis supported** |
| H1 | OK----SM | 2.143 | .261 | 49.98 | .000 | YES |

**Source;** Field data 2023.

Findings revealed that

**R-Square (R²)** The R-squared value, in this case, is 0.261. R-squared measures the goodness of fit of a regression model. It tells us the proportion of the variance in the dependent variable (appropriate self-medication in this case) that is explained by the independent variable (Okigusuri system). An R-squared value of 0.261 means that approximately 26.1% of the variation in appropriate self-medication can be explained by the use of the Okigusuri system. This suggests that there is some relationship between these two variables.

**P-value** The probability value is given as 0.000. In regression analysis, the p-value associated with an independent variable tests the null hypothesis that the independent variable has no effect on the dependent variable. A very low p-value (in this case, effectively 0.000) typically indicates that there is a significant relationship between the Okigusuri system use and appropriate self-medication.

The findings indicate that there is a statistically significant relationship between the use of the "Okigusuri" system and appropriate self-medication, and the model explains approximately 26.1% of the variability in appropriate self-medication based on the information provided. The use of Okigusuri system alone cannot predict individual self-medications, other factors like individual education, and health seeking behavior can be considered to conclude the relationship.(Mitra et al., 2019)

### **4.5.3 Preferred medicines for Self-medication**

Exploring the type of medicines that individual stock in their household for self-medicating is a crucial point in this study as it natures the understanding of commonly medicines used and open a way for furthers studies into the area based on the results found. Table 4.17 present distribution of respondents based on preferred medicine for self-medicating.

Table 2:4.15. Distribution of respondents by Preferred Medicines for Self-Medication

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Preferred Medicines** | **Frequency** | **Percent** | **Valid Percent** | **Cumulative Percent.** |
| Analgesic | 84 | 60 | 60 | 60 |
| Antibiotics | 2 | 1.4 | 1.4 | 61.4 |
| Cough mixture | 4 | 2.9 | 2.9 | 64.3 |
| Antimalaria | 15 | 10.7 | 10.7 | 75 |
| Anti-allergic | 35 | 25 | 25 | 100 |
| **Total** | **140** | **100.0** | **100.0** |  |

The findings revealed that 60% of respondents were self-medicating with Analgesics, this high percentage suggests a prevalent tendency to self-treat pain with over-the-counter pain relief medications. While these medications are generally safe when used as directed, misuse or overuse can lead to adverse effects, especially if there are underlying health conditions or interactions with other medications. 1.4% of respondents reported self-medicating with antibiotics. This is a relatively low percentage, which is encouraging, as antibiotic misuse can lead to antibiotic resistance and other health risks.(Kadri, 2020) , ,most of the studies conducted in self-medication practice a threat on misuse of antibiotics self-medicated, (Chautrakarn et al., 2021) reported that The most commonly used drug groups were (analgesics) NSAIDs (34.8%) and antibiotics (30.2%), this high percent of antibiotic use has a high risk in antibiotic resistance. A study conducted in Mbeya region (Kajeguka & Moses, 2017) reported that 55.7% of respondents were self-medicating with antibiotics and 19.6% self-medicated with anti-malaria.

These findings highlight the potential of Okigusuri boxes to empower users with self-medication capabilities. WHO is promoting practice of self-medication for effective and quick relief of symptoms without medical consultations and reduce burden on health care services, which are often understaffed and inaccessible in rural and remote areas. (WHO, 2012). However more education is needed to be given to the community to avoid risk associated with self-medication

## **4.6 Medicine Affordability**

Assessing the role of Okigusuri in Medicine Affordability in rural areas of Kisarawe district forms a critical dimension of this study, aiming in evaluating the willingness to pay certain medicines, average medical costs individual spends in basic healthcare, and time it takes to pay for such medications. Table 4.17 present distribution of respondent among Okigusuri users and non Okigusuri users in relation to willingness to pay for medical bills

Table 3:4.16 Crosstabulation Household Okigusuri status and willingness to pay

|  |  |  |  |
| --- | --- | --- | --- |
| **Willingness To Pay Medicines** | **Okigusuri Users** | **Non- Okigusuri User** | **Total** |
| Very willing | 67.1% | 0.0% | 33.6% |
| Willingly | 31.4% | 5.7% | 18.6% |
| Not willing | 1.4% | 7.1% | 4.3% |
| Not willing at all | 0.0% | 87.1% | 43.6% |
| **Total** | **100.0%** | **100.0%** | **100.0%** |

**Source;** Field data 2023

**4.6.1 Average Medical Costs**

The study reports that the average medical costs for the participants were 12,000 Tanzanian Shillings (Tshs). This figure represents the typical amount of money that individuals in the study spent on medical expenses. Understanding the average medical costs is essential for both individuals and policymakers because it provides insight into the financial burden of healthcare on the population. Although there was no significant variation between Okigusuri users and non-users. The study conducted in three regions of Tanzania ( Pwani, Morogoro and Lindi ) it showed that the average medical cost was 0.23 USD but only18% of patients paid for health care. (Binyaruka & Borghi, 2022). This medical cost is significance low as compared to the one reported in our finding.

**4.6.2 Willingness to Pay for Medical Bills**

The findings indicate a significant disparity in the willingness to pay for medical bills between the two groups: Among non-Okigusuri users, 87.1% were not willing to pay their medical bills. Among Okigusuri users, 98.5% were willing to pay their medical bills. This has the following implications;

An independent sample t -test was conducted to compare willingness to pay medical bills for households with Okigusuri and households without Okigusuri boxes, there were significance difference df (138), t (28.486), P= 0.00 and the scored mean for Okigusuri users was 1.34 while the scored mean for non Okigusuri users was 3.81 . H1 was supported, there is a statistical significance difference between mean for willingness to pay between Okigusuri users and non Okigusuri users.

Table 4.17 Independent sample t-test, Difference in willingness to Pay medical bills between Okigusuri users and non Okigusuri users.

|  |  |  |  |
| --- | --- | --- | --- |
|  | | Willingness to pay medical bills | |
| Equal variance assumed | Equal variance not assumed |
| Levene’s Test for equality of variance | F  Sig | 6.37  .013 |  |
| t-test for Equality of means | t | 28.486 | 28.486 |
|  | df | 138 | 137.9 |
|  | Sig (2-tailed) | .000 | .000 |
|  | Mean diff | -2.471 | -2.471 |
|  | Std.error dff | .087 | .087 |
|  | 95% confidence interval of the difference | 2.643 | 2.300 |
| 2.643 | 2.300 |

**Source**, Field data; 2023

**4.6.3 Economic Impact**

The high percentage (87.1%) of non-Okigusuri users who were not willing to pay medical bills suggests that a substantial portion of this group may be financially burdened by healthcare costs. This could have implications for their economic well-being and may raise concerns about their access to essential healthcare services, since affordability of medicines in rural areas affect their access to health services. (Ud Din Babar 2017)

**4.6.4 Effectiveness of Okigusuri**

On the other hand, the high percentage (98.5%) of Okigusuri users willing to pay their medical bills implies that this group may find Okigusuri, to be effective in reducing the financial strain associated with healthcare expenses. This is positive feedback regarding the effectiveness of such a program in making healthcare more affordable. As it was also reported in Mongolia the effectiveness of Okigusuri system in making healthcare more affordable.(Ulaanbaatar, 2017)

**4.6.5 Policy Implications**

These findings could inform healthcare policies in Tanzania, suggesting that there may be a need for expanded healthcare coverage or support programs to reduce the financial barriers to accessing medical services.

# **CHAPTER FIVE**

# **SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS**

## **5.1 Overview**

This chapter presents a summary, conclusion and recommendations drawn from the study. The purpose of this study was to assess the role of Okigusuri system in medicine accessibility, availability and affordability in Kisarawe district.

## **5.2 Summary of the Major Findings**

The findings revealed that 74.2% of respondents using Okigusuri were reported being satisfied with medicine availability, and the major reason being the presence of Okigusuri, while 82.8% of respondent using not using Okigusuri were not satisfied with the medicine availability in the village at the time of need, and 80.7% of their reasons for not satisfying were, lack of essential medicines in the pharmacy and hospital (a frequent out of stock of essential medicines), lack of enough money to pay for medical bills, business hours of where we buy medicines are short. About 32.9% of medicines stored at home were Antifungal, Antiallergics, and Antipain/Analgesic, while only 1.4% of non Okigusuri users stocked Antipain/Analgesic medicines, where they obtained these from near by pharmacy.

It was reported that Mwanzomgumu was a nearby dispensary which was 10km from Bwama village major means of transport was Motorcycle and the mean transport cost was 3750 while Masanganya was reported to be the nearest dispensary which was 6km from Mlegele village, major means of transport was reported to be motorcycle, and mean waiting time was 46.57 minutes and mean consultation time was 15.43 minutes. Majority of non Okigusuri user patients faced substantial time burden to access health care (travel and waiting) and incurred high transport and medical costs compared to their counterparts. Travelling time to the nearest dispensary, waiting time and consultation time was considered as the indirect costs of accessing healthcare. The average medical cost was 12000Tshs but only 12.9% of non Okigusuri users were willing to pay for this bill, and it was reported that it might take them 1 to 3 days to cover this bill. It was also reported that 44.3% of Okigusuri users have a developed health knowledge on appropriate self-medications, it has also been seen in regression analysis that Okigusuri use has 26.1% variations on appropriate self-medication and it is significance since it has a p-value of .000 which is less than 0.05.

## **5.3 Conclusion**

The findings reinforce the need for a greater investment in primary health care to reduce access barriers and cost burdens especially among the worse-offs.

### **5.3.1 Medicine Availability**

The findings strongly suggest that Okigusuri use correlates with improved satisfaction and accessibility to medicines, primarily due to the Okigusuri box. Conversely, non-users encounter challenges in obtaining medicines due to various factors linked to traditional pharmacy reliance. The correlation coefficient underscores the significant association between Okigusuri use and enhanced medicine availability. This indicates the potential for Okigusuri to positively impact and improve the availability of essential medications for individuals who adopt its use. This suggests that the use of Okigusuri services is associated with an increased likelihood of having medicines at home, which also implies that Okigusuri is effectively improving availability of medicines for the households it serves.

### **5.3.2 Medicines Accessibility**

The findings suggest that there's a notable reliance on motorcycles for transport, a considerable cost for accessing medical care, and significant time discrepancies between different modes of transport. The proximity of dispensaries and the associated traveling times and costs might affect the frequency and ease of access to medical care, especially for individuals in the more distant Bwama village. The waiting and consultation times, however, seem relatively efficient once individuals reach the medical facilities although they may have time costs as an indirect cost in accessing medical care. The presence of Okigusuri boxes may lead to improved access to medicines for individuals and families. This, in turn, can facilitate better self-care and quicker responses to common health issues.

### **5.3.3 Appropriate Self-Medication Capacity**

The findings suggest that a significant proportion of Okigusuri users are capable of self-medicating without seeking consultation, and they are more likely to consult Okigusuri managers for this purpose. However, a substantial number of non-users also consult Okigusuri managers, and many seek guidance from healthcare workers. The preference for self-medication varies, with a majority preferring analgesic. The statistical analysis indicates that Okigusuri use is strongly associated with self-medication capacity, emphasizing the role of this health approach model/system in enabling self-medication practices. This correlation might also suggest a shift in healthcare behavior among households with Okigusuri boxes as People may be more proactive in managing their health and stocking medicines due to the presence of this service. It is essential to consider these findings for healthcare policies and interventions related to self-medication practices.

### **5.3.4 Medicine Affordability**

The findings indicate a clear divergence in the attitudes towards paying for medical expenses between these two groups. This insight could be crucial in understanding the financial considerations and the perceived value of medical services, particularly within these distinct user groups**.** The stark contrast in willingness and ability to pay between the two groups might be linked to socio-economic factors, such as income, employment, or access to financial assistance or health insurance This substantial contrast suggests that Okigusuri users are significantly more open to bearing their medical expenses compared to non-Okigusuri users.

## **5.4 Recommendations**

Referring to what has been found out in this study, the study revealed issues of concern and the researcher provides the following recommendations.

### **5.4.1 Recommendation to Afrimedico**

The Afrimedico team should provide more education to its beneficiaries to increase basic health literacy rate, also for the sustainability of the program more community engagement, education and other regulatory bodies should be consulted, there should be a constant refill schedule as some of the beneficiaries reported that there is a delay in refill schedules.

### **5.4.2 Recommendation to Government**

Ministry of Health should increase budget for strengthening primary healthcare in rural areas as well as enough budget to medical store department to ensure availability of essential medicines and constant distribution to remote dispensary in all rural areas to avoid frequent stock out, also government should employ more health workers in rural areas.

### **5.4.3 Recommendation to Policy Makers**

The policy maker should make the policies which are supportive for the multisector to engage friendly in supporting universal health coverage goal to all by 2030 especially to poor people in rural areas in Tanzania. It is also essential for healthcare policymakers and providers to work together to develop strategies that make medicines more affordable and accessible in rural areas. This might involve improving infrastructure, optimizing supply chains, and implementing policies to reduce the cost of medicines. Additionally, exploring telemedicine and mobile clinics can help bridge the gap for those in remote areas.

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# **APPENDICES**

**APPENDIX I: VILLAGERS CONSENT FORM**

**Dear respondent**

I am a student from Open University – Tanzania. I am studying Masters of Arts in Monitoring and Evaluation. This questionnaire aims to examine your answers to these questions about ***“The Role of the Okigusuri System in Medicine Accessibility, Availability, and Affordability in Kisarawe District.”*** It is a partial of fulfillment of the requirement of the award of masters of arts in monitoring and evaluation. Your given information will remain confidential. Therefore, I am asking for your cooperation in filling this questions form.You can drop out our survey whenever you like.

This form aims at seeking for consent from villagers to provide their correct information to be used by the researcher

PERMISSION

Date.................................................

I …………………………………on behalf of my family with a sane mind, am willing to provide my family information correctly, without any external force or pressure to be used by researcher for our well-being.

Family member’s Signature…………………………

Village name: ………………………………………

The house identification number: …………………………

The Okigusuri　ID　 number: …………………………

ID written in Okigusuri box: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Name written in Okigusuri box: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Village name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

House identification number (Address No.): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Villagers Survey 2023**

**Date of the interview\_\_\_\_\_\_\_\_/\_\_\_\_\_\_\_\_/2023 TIME AM/PM \_\_\_\_: \_\_\_\_～＿＿：＿＿ (min)**

|  |  |
| --- | --- |
| **Respondent’s name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** | **Respondent’s gender \_\_\_\_\_Male / \_\_\_\_\_\_Female** |
| **Respondent’s age \_\_\_\_\_\_\_\_\_years old** | **Respondent’s phone number\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** |
| **Investigator name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** | **GPS \_\_\_\_\_°\_\_\_\_\_’\_\_\_\_\_\_\_\_’’ S, GPS\_\_\_\_\_°\_\_\_\_\_’\_\_\_\_\_\_\_\_’’ E** |

**【Section 1: Socio-demographic characteristics】**

*Please tell us about breadwinner of your household and your household.*

*Here, breadwinner means primary or sole income earner.*

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Questions regarding breadwinner of your household -*Check one option.* | | | | | | | | |
| Q1. Which educational level did household’ head complete? | □ Not completed any school  □ Primary  □ Secondary  □ Higher | | Q2. Does household’s head currently work? If yes, which employment status is it? | | | □ Self-employed  □ Employed by someone, permanent  □ Employed by someone, temporal  □ Don’t work | | |
| Q3. What is the main occupation  of household’s head?  *Multiple answer allowed.* | □ Farming  □ Formal sector  □ Small scale business excepting farming  □ Housewife | | | | □ Trading  □ Artisans  □ Other (Specify: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_) | | | |
| Questions Regarding your household | | | | | | | | |
| Q4. Tell us monthly and annual household income. | (Including remittances,)  Last month: \_\_\_\_\_\_\_\_\_\_\_\_\_\_Tsh  2 months ago: \_\_\_\_\_\_\_\_\_\_\_\_\_\_Tsh  3 months ago: \_\_\_\_\_\_\_\_\_\_\_\_\_\_Tsh  Annual: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Tsh | | | Q5. Do your household own a house or land, car, motorbike? *Multiple answer allowed.* | | | | □ House  □ Car  □ Land  □ Motorbike/bicycle  (How many?: \_\_\_\_\_\_\_\_\_\_ ) |
| Q6. Tell us the number of household members & age of children under 15. | (Including the respondent)  \_\_\_\_\_\_\_\_\_\_\_person(s)  Age of children under 15 years old:  (\_\_\_\_\_\_, \_\_\_\_\_\_, \_\_\_\_\_\_, \_\_\_\_\_\_, \_\_\_\_\_\_, \_\_\_\_\_\_, \_\_\_\_\_\_, \_\_\_\_\_\_, \_\_\_\_\_\_, years old) | | | | | | | |
| Q7. How many household members involved in any kind of health insurance, pension, and/or any social support?  And tell us how much your household received in total within the last 90 days and type of them. | | How many:  \_\_\_\_\_\_\_\_\_\_\_\_\_\_person(s) | | | | | Type (Multiple answer allowed)  □ National insurance  □ Community Insurance  □ Private insurance  □ Social support for child  □ Pension  □ Other (Specify: \_\_\_\_\_\_\_\_) | |
| Amount you received within the last 90 days:  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Tsh | | | | |

**【Section 2:Medicine availability】**

**Q8.**When you want medicine, where do you get it? (Multiple answer is allowed.)

•□ Pharmacy

•□ Dispensary

•□ Okigusuri box

•□ Other ( )

**Q9**. Does your household have a situation where medicine is needed? If Yes, **which of the following describes your satisfaction with availability of medicine? Rank out of five.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| □ Very easy | □ Easy | □ Neither easy or difficult | □ Difficult | □ Very difficult |
|  | | | | |

**If you chose “Very easy” or “Easy”, tell us what makes it easy.**

|  |  |  |  |
| --- | --- | --- | --- |
| □ Pharmacy locates nearby | □ Leftover stock in the house | □ Essential medications are prescribed at the hospital/clinic | □ Okigusuri box |
| **□** Other(Specify: **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**) | | | |

**If you chose *“Difficult”* or *“Very difficult”*, which of the following is reason why you finds difficulty?** *Multiple answer allowed.*

|  |  |  |
| --- | --- | --- |
| □ Essential medicine is not dealt in near pharmacies/where you buy medicine | □ Essential medicine is often sold out | □ Essential medicine is expensive |
| □ Don’t know which medicine is need | □ The nearest pharmacy/where you buy medicine is far | □ Don’t have enough time to go to pharmacy/where you buy medicine |
| □ Business hours of pharmacies/ where you buy medicine are short | □ Transportation fee to pharmacy/where you buy medicine is expensive | □ Other ( \_\_\_\_\_\_\_\_\_\_\_\_\_\_) |

**Which among of the following medicines are available at your house as of today.?**

|  |  |  |
| --- | --- | --- |
| □ Paracetamol tabs/syp | □ Albendazole tabs/syp | □ Cough mixture adult/paed |
| □ Diclofenac | □ Diclofenac gel | □ Cetirizen /piriton |
| □ Ibuprofen | □ Clotrimazole cream | □ Bandage |
| □ Spirit /u-sol/povidone iodine | □ Burn cream | □ Metronidazole tabs /syp |
| □ ALU | □ Amoxicillin (all antibiotics) | □ Other ( \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ) |

**【Section 3: Medicine Accessibility】**

**Q9.** What is the name of the nearest dispensary …………………..

**Q10**. How far is the nearest dispensary ………km

**Q11**. What is the means/model of transport to the dispensary and how much does it cost.?

Provide means and time they use to reach hospital and cost.

|  |  |  |
| --- | --- | --- |
| **Model of transport** | Time to travel in min | Cost in Tshs |
| □ Foot | □ | □ |
| □ Motorcycle/bicycle | □ | □ |
| □ car | □ | □ |

**Q12.** What is the average waiting time and consultation time ……..min …………min

**【Section 4: Self medication capacity】**

**Q13. When you(=respondent) make a decision on action for household member’s bad health condition, do you consult someone? Who is it?** *Multiple answer allowed.*

|  |  |
| --- | --- |
| □ No  (=Make decision by  yourself) | □ Yes  → Who is it?  □ Spouse  □ Friends/neighbors  □ Okigusuri manager  □ Other (Specify: \_\_\_\_\_\_\_\_\_\_\_\_\_) |

**Q14. Which medicine do you always reserve at home?** *Multiple answer allowed.*

|  |  |  |
| --- | --- | --- |
| □ None | □ Analgesic | □ Stomach medicine |
| □ Antipyretic | □ Antibiotics | □ Other (Specify:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_) |

**Q15.** **Where did you get the information about the dosage and administration of the drug?** *Multiple answer allowed.*

|  |  |  |
| --- | --- | --- |
| □ Description on the package | □ Your own memory | □Ask friends or neighbors |
| □ Books | □ Ask household members | □ Instruction from medical workers |
| □ Okigusuri manager | □ AfriMedico’s leaflet | □ Other (Specify:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_) |

**【Section 5: Medicine affordability】**

**Q16. What is the cost of the following medicines? (Either from Okigusuri price list or experience from near-by pharmacy)**

|  |  |  |
| --- | --- | --- |
| □ Paracetamol tabs/syp | □ Albendazole tabs/syp | □ Cough mixture adult/paed |
| □ Diclofenac | □ Diclofenac gel | □ Cetirizen /piriton |
| □ Ibuprofen | □ Clotrimazole cream | □ Bandage |
| □ Spirit /u-sol/povidone iodine | □ Burn cream | □ Metronidazole tabs /syp |
| □ ALU | □ Amoxicillin (all antibiotics) | □ Other ( \_\_\_\_\_\_\_\_\_\_\_\_\_ ) |

**Q17. How long does it take for you to pay medical bills**

|  |  |  |
| --- | --- | --- |
| □ instantly | □ several hours | □ 1-3 days |
| □ Week | □ Months |  |

**Q18. How is your willingness to pay for the above-mentioned medicine prices.?**

|  |  |  |  |
| --- | --- | --- | --- |
| □ Very satisfied | □ Satisfied | □ Not satisfied | □ Not satisfied at all |

**【Section 6: Feedback to Okigusuri service】**

**Q19. Does your household currently utilize Okigusuri box?**

|  |  |  |  |
| --- | --- | --- | --- |
| □ Yes | □ No, but we used to use | □ Never | □ Yes, but we will stop using |

*→ If “No, but we used to use”*, *or “Yes, but we will stop using” skip to Q24.*

*→ If “Never”, the survey is finished here. Thank you for your cooperation.*

If “Yes,” please list three medicines you use most often.

|  |  |  |
| --- | --- | --- |
| ( \_\_\_\_\_\_\_\_\_ ) | ( \_\_\_\_\_\_\_\_\_\_\_\_\_ ) | ( \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ) |

**Q20. How do you satisfy with Okigusuri box?** *Check one option.*

|  |  |  |  |
| --- | --- | --- | --- |
| □ Very satisfied | □ Satisfied | □ Not satisfied | □ Not satisfied at all |

**Q21. Why do you continue to use Okigusuri box?** *Multiple answer allowed.*

|  |  |
| --- | --- |
| □ You can take medicines as soon as you need it. | □ It contains medicines that we use frequently |
| □ Reasonable price | □ It contains medicines that I usually don't buy |
| □ It saves me the trouble of going to the pharmacy  or clinic | □ Good support and service by staff |
| □ "Use first & pay later" system is convenient. | □ Other reason (Specify:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_) |

**Q22. Please tell us if there is anything that needs improvement.**

|  |  |
| --- | --- |
| □ Need more variety of medicines | □ Unclear in how to use |
| □ Too expensive | □ Less support for how to use |
| □ Need more times to refill & pay | □ Timing of refill & payment is not appropriate |
| □ You forgot the existence of OKIGUSURI itself | □ Other reason (Specify: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_) |

**Q23. Please tell us about an episode in which you were glad to have Okigusuri box.**

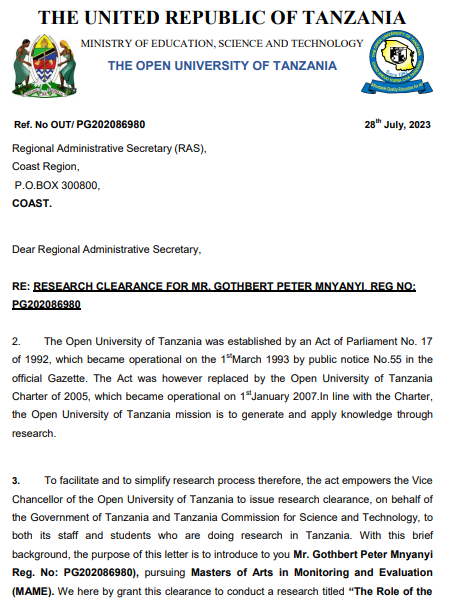
**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

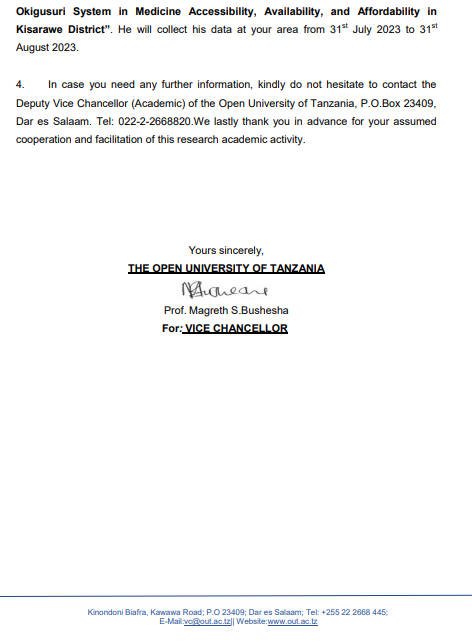
**Q24. Please tell us why you stop using Okigusuri box.**

|  |  |
| --- | --- |
| □ Inconvenient | □ Refilling is inconvenient. |
| □ Too expensive | □ Payments are inconvenient. |
| □ Rarely used | □ Not clear on how to use |
| □ We can get medicine at hospital or pharmacy. | □ Staff doesn’t show up. |
| □ Need more variety of medicines | □ Other reason (Specify: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_) |
| □ It doesn’t contain Essential medicines. |  |

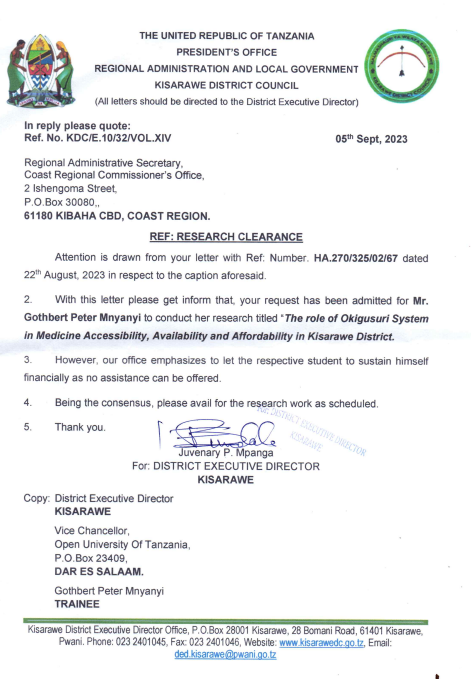
**Thank you for cooperating the survey.**

**APPENDIX II:**

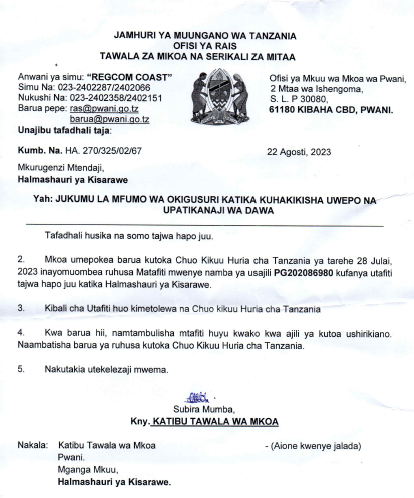
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**APPENDIX III:**



**APPENDIX IV:**



**APPENDIX V:**

**The Role of the Okigusuri System in Medicine Accessibility In Kisarawe District Tanzania.**

**Authors:** Gothbert Peter Mnyanyi1, Dr. Harrieth G Mtae2.

**Keyword:** Okigusuri System, Medicine Accessibility.

**ABSTRACT:**

**Introduction:** Access to essential medicines remains limited and inequitable and the disparities in access are well noted between urban and rural in low- and middle-income countries. In Tanzania, there is inadequate medicine accessibility in rural areas, and different initiatives have been taken to address equitable access to safe and affordable essential medicines. The aim of this study was to assess the role of the Okigusuri system in Medicine accessibility in rural areas of Tanzania

**Methods:** A cross-sectional design was used**,** Data was collected from 140 purposive sampled participants, including 70 households using Okigusuri and 70 households non-Okigusuri users, from Mlegele and Bwama Villages in Kisarawe district. Questionnaire and document review were employed followed by analysis using SPPS version 26. Descriptive and inferential statistics were reported on the role of the Okigusuri system in medicine Accessibility in rural areas of Tanzania.

**Findings:** 92.4% ofnon-Okigusuri users were not satisfied with medicine accessibility, time costs, medical costs, and stock-out were found to be burdens to medicine accessibility, mean travel time was 15 minutes, while mean waiting and consultation time was found to be 47 minutes and 16 minutes respectively, Frequent essential medicines stock out in the villages Pharmacy as well as in dispensaries was reported by 55.4% of respondent. The majority 96.8% reported accessing medical care by motorcycle as the major means of transport with the mean transport cost being 7000Tshs for round trips and average monthly medical expenses were reported to be 55000Tshs.

**Conclusion and recommendation:** Time cost (traveling time, waiting time, and consultation time), medical costs,and frequent stock-out of essential medicines in the pharmacies and dispensaries in rural areas were found to be the limiting factors for adequate access to essential medicine in rural areas. Okigusuri beneficiaries face less of these burdens as the system covers all the limiting aspects. The presence of Okigusuri boxes may lead to improved access to medicines for individuals and families. This, in turn, can facilitate better self-care and quicker responses to common health issues.

# **INTRODUCTION;**

The World Health Organization (WHO) has defined access to medicine as a person’s ability to continuously obtain an essential medicine that is available within a 1-hour walk at an affordable price from either a health facility or a medicine outlet. Nearly 2 billion people have no access to essential medicines, causing a cascade of preventable misery and suffering, from no relief for the excruciating pain of a child’s earache to women who bleed to death during childbirth, to deaths from diseases that are easily and inexpensively prevented or cured. (WHO 2017.)

If not controlled inadequate access to affordable medicines can lead to serious health problems in rural areas, which can result in economic burden in terms of reduced economic production as well as health financing burden. Hence results in poverty and economic dependence. (David,2022). Access to affordable, quality, and safely available medicine is the core factor to the contribution of universal health coverage (Wirtz et al., 2017).

In Tanzania, there is inadequate access to affordable medicine for primary health care in rural areas, with poor informed decisions when it comes to health matters about 67.1% of village people are illiterate when it comes to health. (Muhanga & Malungo, 2018) (Bell et al., 2013)

About 300 years ago Japan introduced the OKIGUSURI system as an initiative to tackle the major crisis of access to essential medicine which was among the drivers of poverty and poor development in most of its rural areas,(Toyama, 2018). The introduction of OKIGUSURI system, a Japanese mode which means “*use first pay later”* where by medicines/medical products are delivered to households by apothecary/pharmaceutical personnel in a special box and household members can use when needs arise, then the apothecary can revisit in a scheduled visit(i.e. after two weeks/after a month) to correct money for what has been used and refill medicine that has been used or add new ones if are needed, the system improved the accessibility of medicine in remote/rural areas and hard reaching areas and served lives of many people who could not afford medical bills at a time. (Megumi, 2015)

Okigusuri system in Tanzania was introduced in 2015 and it is operated by a Japanese organization known as Afrimedico, to people and communities in remote and hard to reach areas where access to medicines and quality health-care service is not guaranteed. With the aim of ensuring accessibility to affordable, and quality medicine, and to enhance community engagement and provide them with self-medication education. The programme has been implemented in two villages (Bwama and Mlegele) kisarawe district Pwani region for five years as pilot project, with over 220 households using Okigusuri system by 2021. Okigusuri joined forces with pharmaceutical society of Tanzania (PST) in providing medicines and education services to the villagers in need of the services.

Medical store department (MSD) as an autonomous Department that has responsibility to develop, maintain and manage an efficient and cost effective logistics system of Procurement, Storage and distribution of safe and quality essential medicines, medical supplies and laboratory reagents for public and approved private health facilities. (MSD, 2008). in 2013 introduced a distribution system known as Direct Delivery (dd), where by medicines are delivered directly to the health centers in the villages, unlike old method of using district hospital as end point of delivering, (MSD, 2014), despite the introduction of direct delivery system, essential medicine accessibility is still a problem in Tanzania rural areas, many areas are hard to reach especially during rain seasons due to poor infrastructures caused by heavy rains, unlike other part of Msd- Dar es salaam zone, kisarawe district influence heavy rains during rain seasons, with its poor infrastructures in many villages make it difficult for Msd to deliver medicine. (MSD, 2012)

Ensuring reliable and equitable access to safe, affordable and quality medicines in rural areas of Tanzania is key to the achievement of universal health coverage goal by 2030, therefore this study focus on the assessment of the role of Okigusuri system in medicine accessibility, accessibility and affordability in rural areas of Tanzania.

# **METHODS**

## 3**.2 Research design:**

Cross Sectional study design was employed using quantitative approach

## **3.3 Study area;**

The study was conducted at Kisarawe District in Pwani region, specifically in two villages Bwama and Mlegele where Okigusuri project was implemented. The area was purposeful selected by the researcher since it only place where the Okigusuri project was taking place.

## **3.4 Study population.**

The population for this study included active households with Okigusuri boxes and selected households without Okigusuri boxes in Mlegele and Bwama villages.

## **3.5 Sample and Sampling Procedure**

### **3.5.1 sample size**

The sample size was calculated by using a rule of thumb of sample calculation, which states that a good maximum sample size is usually around 10% of the population, as long as this does not exceed 1000. For the large population minimum sample size 100 and for small population minimum sample size is 20 to 50.(Burmeister & Aitken, 2012). Therefore, the study included a total of 140 responded where 70 respondents will be Okigusuri users and 70 respondents will be non Okigusuri users

## **3.6 Unit of analysis**

Unit of analysis for this study was the household. The end target of Okigusuri system is the placement of Okigusuri box in the households. In this study household refers to a house with or without Okigusuri box,

## **3.7 Data Collection Method and Tools**

Questionnaires, and document review were used to collect data from respondent

## **3.8 Data Analysis**

The collected data were stored and analysed using Statistical Package for Social Science (IBM SPSS Statistics) version 26.

## **3.9 Validity and Reliability of Data**

### **3.9.1 Validity of Data**

In this study, a questionnaire pre-testing was employed to elucidate and purify the meaning of questions to be clearly understood. research instrument was then piloted with 10 respondents randomly selected from the target population. On the basis of their comments, changes were made to the questionnaire to clarify wordings and increase readability. The pre-testing procedure was important to establish content validity.

## **3.9.2 Reliability of Data**

In this study, the issue of reliability was ensured by use of different data collection methods such as review of secondary data and tools such as questionnaires and interview with appropriate sample size and techniques which are in this case are random and purposive sampling. To ascertain the reliability, the researcher used a test-retest method during the pilot survey and back-check of the questionnaire.

## **3.10 Ethical Considerations**

Researcher before going to the field for the data collection obtained research clearance permit from the Open University of Tanzania. The permit helped researcher to obtain authority and get permission from Kisarawe district office to collect data at Bwama and Mlegele village. Before the interview, the researcher requested consent from the participants and made clear that participation in the study is voluntary and the participants has the right to terminate their participation at any time. The researcher entered and store data in protected computer. The researcher ensured the protection of participants’ confidentiality by not including their names in the report.

# **DISCUSSION OF THE FINDINGS**

### **Respondents’ Residence**

The respondent’s residence forms a crucial aspect of the study's exploration, providing the diverse geographical distribution and perspectives present within the sample from Kisarawe District. Table 1 shows the distribution of respondents by residence.

#### **Table 1 Distribution of Respondents by Residence.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Respondent Residence** | **Frequency** | **Percent** | **Valid percent** | **Cumulative percent.** |
| BWAMA | 55 | 39.3 | 39.3 | 39.3 |
| MLEGELE | 85 | 60.7 | 60.7 | 100 |
| Total | 140 | 100.0 | 100.0 |  |

**Source;** Field data 2023

The distribution of respondents by residence as depicted by table 4.8 provide statistics that can offer insights into the demographic distribution within the surveyed population.

**Bwama Village (39.3%):** The population residing in Bwama comprises a significant, though somewhat smaller, portion of the respondents. Demographic characteristics, lifestyle, access to resources, and healthcare services within Bwama might differ from those in Mlegele.

**Mlegele Village (60.7%):** The larger majority of respondents reside in Mlegele, indicating it is the more populated or prevalent village among the surveyed individuals. The larger percentage might imply greater diversity or represent a broader demographic within the study.

The findings about the distribution of respondents between Bwama and Mlegele villages provide crucial insights into the demographic makeup of the surveyed population. Understanding these differences is pivotal for designing effective health interventions, allocating resources, and implementing policies that cater to the specific needs of each community. (Anselmi et al., 2015).

Satisfaction of villagers with medicine accessibility

Medicine accessibility satisfaction was cross tabulated with household using and not using Okigusuri. Table 2 shows the distribution of respondents;

#### **Table; 2 Crosstabulation medicine accessibility vs households Okigusuri status.**

|  |  |  |  |
| --- | --- | --- | --- |
| **Medicine accessibility satisfaction** | **Okigusuri user** | **Non Okigusuri user** | **Total** |
| Very easy | 37.1% | 0.00% | 18.6% |
| Easy | 37.1% | 0.00% | 18.6% |
| Neither easy nor Difficult | 0.00% | 17.1% | 8.6% |
| Difficult | 21.4% | 77.1% | 49.3% |
| Very difficult | 4.3% | 5.7% | 5.0% |

Source; Field data 2023.

**Satisfaction with medicine accessibility**

From table 2 above Findings revealed that 37.1% of respondents using the Okigusuri box reported being satisfied with medicine accessibility where they found it very easy for medicine accessibility in the village, another group 37.1% also found it easy and being satisfied with medicine accessibility. This indicates that a majority of Okigusuri box users find it convenient and effective in providing them with the medicines they need, on the other hand none of the respondents without Okigusuri box were not satisfied with the medicine accessibility. In contrast, non-Okigusuri users are experiencing significant challenges in obtaining medicines. None of them are satisfied with medicine accessibility, and a large majority (77.1%) find it difficult to get the medicines they require. This indicate that Okigusuri system, might play a crucial role in facilitating accessibility of medicines, potentially through improved distribution channels that is homebased medicine placement, which is not present or as effective for non-Okigusuri users. Some scholars(Yaya et al., 2017) urge that the disparities in healthcare infrastructure, economic constraints, and geographic isolation as significant contributors to the lower satisfaction levels regarding medicine accessibility in rural areas. Efforts, such as telemedicine, mobile clinics, and community health initiatives, might be referenced as potential solutions to improve medicine access and satisfaction in these regions.(Alhozgi et al., 2021)

**Major Source of Medicine**

A notable finding is that 90.5% of Okigusuri users mentioned the Okigusuri box as their major source of medicine. This suggests that the Okigusuri box plays a crucial role in ensuring medicine accessibility for this group. In contrast, 72% of non-Okigusuri users mentioned the pharmacy as their major source of getting medicine. It's interesting to note that a significant portion of non-Okigusuri users still rely on pharmacies despite being located far away and cost of medicine being high. This may indicate that they have limited access to alternatives for obtaining medicines. Additionally, 12% of non-Okigusuri users mentioned hospitals as their source of medicine, hospitals are generally not the primary source of obtaining routine medications,(Chowdhury & Chakraborty, 2017) so this could indicate that these respondents have to resort to hospitals due to limited options. The Okigusuri box appears to have a positive impact on medicine accessibility and satisfaction among users. This suggests that such a rural health approach systems could be a solution to improve accessibility and access to medicines, especially for those who may face challenges accessing traditional pharmacies. This aligns with the literature on the growing use of technology in healthcare, such as automated medication dispensing systems, to enhance patient adherence and medication access(Chisholm-Burns et al., 2010)

**Drivers for Easiness in Medicine Accessibility**

Drivers for easiness satisfaction of villagers with medicine accessibility forms a pivotal aspect of this study, as it delves into the dissemination and comprehension of information for individual with and without Okigusuri box who are satisfied with medicine accessibility in their villages. Table 3 present the distribution of respondent.

**Table *3* Distribution of respondent on easiness of medicine *Accessibility*.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Reasons** | **Frequency** | **Percentage** | **Valid percent** | **Cumulative percentage** |
| Pharmacy located near-by | 1 | 2.3 | 2.3 | 2.3 |
| Left over stock in the house | 2 | 4.7 | 4.7 | 7 |
| Essential medicines are available at dispensary | 1 | 2.3 | 2.3 | 9.3 |
| Okigusuri Box | 39 | 90.7 | 90.7 | 100 |
| Total | 43 | 100.0 | 100.0 |  |

**Source**; Field data 2023

**Easiness of Medicine Accessibility due to Okigusuri Box**

This high satisfaction rate 90.7% suggests that the Okigusuri box is a reliable and effective means of ensuring medicine accessibility. It aligns with the idea that automated medication dispensing systems, like the Okigusuri box, can enhance accessibility and access to medication, especially in situations where traditional healthcare infrastructure may be lacking or inaccessible. Studies have shown that telemedicine and telepharmacy solutions, including automated dispensing systems, can improve patient adherence and health outcomes by providing convenient access to medications.(Nduka et al., 2023).

**Easiness of Medicines Accessibility due to pharmacy being located near-by and due to available medicines at the village dispensary,** The smaller percentages 2.3% attributing ease of access to nearby pharmacies or dispensary accessibility suggest that while the Okigusuri box plays a dominant role, there are still other existing means contributing to the accessibility of medicines for a minority of users. This might imply that multiple avenues can enhance medicine accessibility, but the Okigusuri box significantly stands out as the primary facilitator for the vast majority of users, in Bwama and Mlegele villages. Pharmacy and dispensaries in rural areas also serve as centers for health education, Pharmacists and healthcare professionals can educate the community about preventive measures, proper medication usage, and general health practices, thus promoting health awareness and disease prevention.(Kebede et al., 2021)

**Drivers for limited/difficult Accessibility of Medicine**

Assessing reasons for difficultness accessibility of medicines and the reasons for villagers not being satisfied with medicine accessibility in their community, provide a crucial point for understanding the role of Okigusuri in Medicine Accessibility. Table 4.11 present the distribution of respondents.

**Table; 4Distribution of respondent by difficultness on medicine *accessibility***

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Reasons** | **Frequency** | **Percent** | **Valid Percent** | **Cumulative percent.** |
| Pharmacy lacks essential medicines | 19 | 19.6 | 19.6 | 19.9 |
| Essential medicines are expensive | 11 | 11.3 | 11.3 | 30.9 |
| Pharmacy is located far | 10 | 10.3 | 10.3 | 41.2 |
| High Transport fee | 12 | 12.4 | 12.4 | 53.6 |
| All of the above | 45 | 46.4 | 46.4 | 100 |
| Total | 97 | 100 | 100 |  |

**Source;** Field data 2023.

A significant proportion of respondents, 46.4%, reported their dissatisfaction with medicine accessibility in rural areas due to expensive medicines in the pharmacy, pharmacy being located very far, pharmacy and dispensaries lack essential medicines and high transport fee. This suggests that the cost of medicines may be a significant barrier for many individuals living in rural areas. High medicine prices can limit access to essential healthcare, especially for people with limited financial resources.(Olasehinde & Olaniyan, 2017) It may be important for policymakers and healthcare providers to explore ways to make medicines more affordable and accessible in rural areas. The findings also indicate that both pharmacies and hospitals at Bwama and Mlegele villages frequently experience essential medicine stockouts, a total of 46.4% of respondents expressed dissatisfaction due to this issue. Insufficient stock of essential medicines in both healthcare facilities can lead to delayed or inadequate treatment, which can have serious health implications.(Kuwawenaruwa et al., 2020) Addressing stockout issues by optimizing supply chain management, ensuring regular restocking, and improving inventory management could enhance medicine accessibility.(Leung et al., 2016)

**Correlation Medicine accessibility**

The researcher wanted to observe the relationship between medicine accessibility and use of Okigusuri, the researcher hypothesized that the increase in Okigusuri use increase accessibility of medicines, the researcher used correlation coefficient to test the hypothesis. Table 5 below shows correlation coefficient.

**Table *5*  Correlations Household Okigusuri status versus Medicine *accessibility*.**

**Correlations**

|  |  |  |  |
| --- | --- | --- | --- |
|  | | **Medicine Accessibility** | **Household Okigusuri status** |
| **Medicine Accessibility** | Pearson Correlation | 1 | .722 |
| Sig. (2-tailed) |  | .000 |
| N | 140 | 140 |
| **Household Okigusuri status.** | Pearson Correlation | .722 | 1 |
| Sig. (2-tailed) | .000 |  |
| N | 140 | 140 |

\*\*Correlation is significant at the 0.01 level (2-tailed)

**Source;** Field data 2023.

**Positive Pearson Correlation** A Pearson correlation coefficient of .722 suggests a strong positive relationship between the two variables, which, in this case, are the presence of Okigusuri boxes in households and the accessibility of medicines. A correlation coefficient of +1 would indicate a perfect positive relationship, while 0 would indicate no relationship, and -1 would indicate a perfect negative relationship. A coefficient of .722 is relatively high and indicates a substantial positive association.(Sedgwick, 2012)

**Statistical Significance** The probability value (p-value) of .000 is stated, and it's mentioned that this value is below the conventional significance level of P < 0.05. This means that the relationship between the presence of Okigusuri boxes and the accessibility of medicines is statistically significant.(Netsereab et al., 2018)

**Hypothesis Supported** The findings support the hypothesis that the accessibility of Okigusuri boxes in households has a positive impact on the accessibility of medicines. This aligns with the intuitive expectation that a rural medicines health approach, such as Okigusuri, can influence the presence of medicines in households. (Rangari et al., 2020)

The findings suggest that Okigusuri system may offer a convenient way for individuals to access and procure medicines, which could explain the positive correlation. The convenience of having medicines readily available in the home might encourage more people to keep a supply of essential drugs. (Anwar et al., 2015)

**Proximity of Dispensaries**

Findings revealed that Masanganya dispensary was the nearest dispensary from Mlegele Village which was reported to be 6km away from the village center while Mwanzomgumu was reported to be the nearest dispensary from Bwama village and it was reported to be 10km from Bwama center. The considerable distance to the nearest dispensaries may require initiatives to increase access, such as mobile health clinics or transportation subsidies,(Quattrochi et al., 2020) this puts Okigusuri as the right system for easy access of medicine.

**Mode of transport and travel time**

According to table 6 Findings revealed that, 92.1% of the respondents reported using motorcycles as their primary means of transport. This suggests that motorcycles are the dominant mode of transportation for the Bwama and Mlegele community that it applied to both Okigusuri users and non-users. Interestingly, 5.7% of respondents reported traveling by foot to access medicine. This might indicate that a small but notable percentage of the population does not have access to motorcycles or other motorized forms of transport, possibly due to economic or geographical constraints.

**Table *6* Distribution of respondents by transport means**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Transport Means** | **Frequency** | **Percent** | **Valid percent** | **Cumulative Percent** |
| Foot | 8 | 5.7 | 5.7 | 5.7 |
| Motorcycle | 129 | 92.1 | 92.1 | 97.9 |
| Car | 3 | 2.1 | 2.1 | 100.0 |
| Total | 140 | 100.0 | 100.0 |  |

**Source;** Field data 2023

Motorcycle users reported an average traveling time of 15 minutes, while those traveling on foot reported an average time of 1 hour and 30 minutes. This indicates a substantial difference in the time required to access healthcare based on the mode of transport, long travel times on foot can be physically demanding and may discourage some individuals from seeking timely medical care. (Brown et al., 2019)

**Mean Transport Cost**

The mean transport cost was reported to be 3750 Tanzanian shillings this provides insights into the financial burden of accessing healthcare for individuals in Bwama and Mlegele villages. It's essential to consider this cost in the context of the local economy and income levels, as it can significantly impact people's ability to access medical care.(Sultana et al., 2017). The cost of transportation and long travel times on foot may be financial and physical barriers that hinder people from seeking medical care in a timely manner,(Binyaruka & Borghi, 2022) this wasn’t the case for the Okigusuri users as they have medicine in timely manner no need for transport cost to access medicine.

### **4.4.4. Waiting Time and Consultation Time**

The mean waiting time was reported to be 46.57 minutes which suggests that, on average, patients spend nearly an hour waiting to receive medical attention. This waiting time is an important aspect of the overall healthcare experience and can affect patient satisfaction and the perceived quality of care. While the mean consultation time was reported to be 15.43 minutes which represents the average duration of medical consultations. The Study (Binyaruka & Borghi, 2022) conducted in Pwani region found that most patients (71%) accessed care on foot, The use of car, motorcycle or bicycle to access care was pro-rich while travelling on foot was pro-poor, The average waiting time and consultation time were 46.7 minutes and 12.9 minutes, respectively. The poorest and rural patients faced substantial time burden to access health care (travel and waiting) but incurred less transport and medical costs compared to their counterparts. The findings have similarity with our study, but a slightly difference is seen on major means of transport as in our study Motorcycle was reported to be major means of transport to access medical care in both villages.

**CONCLUSION AND RECOMMENDATIONS**

**Conclusion**

The findings strongly suggest that Okigusuri use correlates with improved satisfaction and accessibility to medicines, primarily due to the Okigusuri box. Conversely, non-users encounter challenges in obtaining medicines due to various factors linked to traditional pharmacy reliance. The correlation coefficient underscores the significant association between Okigusuri use and enhanced medicine accessibility. This indicates the potential for Okigusuri to positively impact and improve the accessibility of essential medications for individuals who adopt its use. This suggests that the use of Okigusuri services is associated with an increased likelihood of having medicines at home, which also implies that Okigusuri is effectively improving accessibility of medicines for the households it serves. Time cost i.e., travelling time, waiting time and consultation time as well as travelling cost seems to impose burden in accessibility of medicines to majority of non-Okigusuri users, than it is for Okigusuri users.

**Recommendation to Policy Makers**

The policy maker should make the policies which are supportive for the multisector to engage friendly in supporting universal health coverage goal to all by 2030 especially to poor people in rural areas in Tanzania. It is also essential for healthcare policymakers and providers to work together to develop strategies that make medicines more affordable and accessible in rural areas. This might involve improving infrastructure, optimizing supply chains, and implementing policies to reduce the cost of medicines. Additionally, exploring telemedicine and mobile clinics can help bridge the gap for those in remote areas.

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