

Social Outcomes of Alternative Healthcare-Seeking Behaviour Among Persons Living with Diabetes in Rongo Sub-County, Migori County, Kenya

MacDonald Odhiambo Owuor^{1*}, Erick Ater Onyango², Eliud Oure Oyoo¹

1. Rongo University, Kenya

2. Masinde Muliro University of Science and Technology, Kenya

Abstract

Background: Diabetes burden manifests in social outcomes, with Kenya having the second highest global mortality rate (88.4%), attributable to the inadequacies of mitigation measures. Despite diabetes being manageable, there are concerns about client compliance with biomedical healthcare-seeking behaviour (HSB), which is scientifically recommended, with cases of shifting, combining HSB, or defaulting. This study sought to determine the social outcomes of alternative HSB among persons living with diabetes in Rongo Sub-County.

Methods: This study adopted the Health Belief Model and a convergent mixed-method approach with a descriptive-exploratory design. Yamané's formula was used to sample 257 respondents from a target population of 718 persons living with diabetes in Rongo Sub-County using proportionate and simple random sampling. Six healthcare workers from the purposively sampled health facilities were interviewed. Questionnaires and interview schedules were tested to obtain a validity and reliability index of .83 and .87 respectively.

Results: Pearson's correlation revealed a statistically significant and strong positive relationship between social outcomes and alternative HSB (.60, $p = .00$). The thematically analysed data revealed that perceptions, experiences, and beliefs influenced alternative HSB, thus impacting social outcomes.

Conclusion: This study concluded that there is a strong positive relationship between social outcomes and seeking ethno-medicine (alternative HSB) among persons living with diabetes in the study area. Therefore, there is a need for a well-outlined framework for collaboration between biomedical and alternative healthcare practitioners.

Keywords: Alternative healthcare-seeking behaviour, descriptive exploratory design, ethno-medicine, health belief model, Kenya, persons living with diabetes, social outcomes

Introduction

Diabetes, with a global mortality rate of 8.4% (Vashist & Luong, 2017), is a notable health concern. This is because it is a risk factor for health conditions such as

cancer, cardiovascular diseases, chronic respiratory diseases, kidney damage, nerve damage, stroke, and foot ulcers (World Health Organization [WHO], 2021). In 2019, 1.5 million deaths globally were directly caused by diabetes, and

2.2 million deaths were attributed to diabetes-related NCDs (International Diabetes Federation [IDF], 2019). Africa accounts for approximately 10% of global prevalence (WHO, 2021). Further estimations by IDF (2019) indicate that 79% of people diagnosed with diabetes reside in developing countries where healthcare systems are constrained by inadequate resources (Atun et al., 2017).

Physiologically, diabetes results in gum diseases, erectile dysfunction in men, hearing loss, skin infections, and sleeping disorders (Fisher et al., 2010; Sarwar et al., 2010). Socially, diabetes causes ruin to individuals, families, and society, including personal suffering, negative effects on gender roles, stigmatism and discrimination, poor social relations, reduced social productivity, and poverty due to the long illness and cost implications of its management (Diabetes Declaration and Strategy for Africa, 2006; Hegazi et al., 2015).

People living with diabetes are often forced to choose between spending money on healthcare or meeting other social and economic obligations (Hegazi et al., 2015). Type 2 diabetes, the most common type, mostly affects adults aged above 20 years (IDF, 2019; WHO, 2021). This could be attributable to the multi-morbidity experienced by the elderly (Sibuor, 2018). According to Kleinman (2020), diabetes-related illnesses are exemplified by specific life trajectories with personal and social significance to the individual, which may influence their healthcare-seeking behaviour (HSB).

According to IDF (2011), as outlined in the Global Diabetes Plan 2011-2021, and WHO (2021), diabetes has no cure but can be prevented, controlled, and even go into remission when detected in good time and if properly managed. Stabilizing diabetes requires regular and uninterrupted access to medication and healthcare (WHO, 2021). It involves a healthy diet, moderate physical exercise, social support, uninterrupted medication, and specialized care (National Institute of Diabetes and Digestive and Kidney Diseases, 2020).

Therefore, this study sought to determine the social outcomes of alternative HSB among people living with diabetes in Rongo Sub-County, Migori County, Kenya. It specifically focuses on ethno-medicine, contemporary faith-based healing, and indigenous spiritual healing. Kenya registered the second highest mortality rate for diabetes among persons living with diabetes aged between 20-79 years (88.4%), globally and in Africa (IDF, 2019), implying the possibility of poor HSB. Migori County is more susceptible to diabetes-related multi-morbidity, associated health complications, and mortality due to predisposing factors such as HIV/AIDS and malaria (Kalra et al., 2017; Kasaie et al., 2020), with a prevalence of 2.7% in 2020. This surpasses the 2.2% average national prevalence of diabetes in Kenya. Rongo Sub-County, where the study was conducted, registered the highest increment in diabetes clinic attendance from 658 in 2018 to 1,247 in 2019 compared to other Sub-Counties in

Migori County (Migori County Health Department, 2020).

Literature Review

According to WHO (2021), the survival rate and quality of life of people living with diabetes are dependent on their healthcare-seeking behaviour (HSB). Sultana et al. (2019) noted that proper HSB and prompt management of the condition reduced its severity in Bangladesh. An individual's HSB is influenced by the manifestation of symptoms (Hjelm & Atwine, 2011), perceived and real side effects of medication (Abdullahi, 2011), access to healthcare, quality of care, non-relief (Nimesh et al., 2019; Shivachi & Sidha, 2019), culture and belief systems (Diabetes Declaration and Strategy for Africa, 2006), doctor-patient relationships (Shin et al., 2011), and healthcare system factors and behaviour of care providers (IDE, 2011; Nimesh et al., 2019).

To step up healthcare delivery and improve positive outcomes, the Alma Ata Declaration of 1978 shifted the perception of health to an emphasis on socioeconomic determinants of health, with an emphasis on biomedical disease eradication (Topp & Abimbola, 2018). The utilization of ethno-medicine, indigenous spiritual healing, and contemporary faith-based healing is part of the outcomes of the Alma Ata Declaration, which is highly prevalent in developing countries. Tomar (2016) reported a prevalence of 95%, while the WHO reported 80% (Gathara, 2018) prevalence of seeking and utilization of alternative healthcare services. Alternative HSB, which is one

of the HSB alongside biomedical and combined biomedical and alternative HSB, emphasizes prevention and self-healing and is common when addressing chronic illnesses where biomedical therapies are inadequate (Das et al., 2017).

Alternative HSB is uniquely connected to community sociocultural dynamics (Cross & MacGregor, 2010). Preference for alternative HSB is influenced by the socioeconomic, socio-political, and sociocultural constraints of biomedical healthcare (Mahomoodally, 2013). As pointed out by Ondicho et al. (2015), most patients preferred alternative medications because they are natural and of better quality services, with a deeply rooted belief of efficacy for sustained good health. Belief systems and models of disease causality and treatment influence the use of indigenous religious healing (Ashing-Giwa et al., 2010). According to Verginer and Juen (2018), alternative HSB is sought for cure and clarification of the cause of illness (Mbwayo et al., 2013) and is driven by perceptions of sorcery, witchcraft, and taboos (Winkler et al., 2010). For some women, the feeling of vulnerability when expectant and fear of witchcraft are associated with high maternal mortality influence their demand for spiritual protection (Kamaara et al., 2019). Some patients prefer indigenous healing because of their strong belief in indigenous medications and the provision of immediate symptomatic pain relief (Birhanu et al., 2012). Mchidi (2016) also observed that the utilization of alternative HSB among nurses with poor general health and increased nursing education

was highly associated with alternative HSB.

According to Ensor and Witter, as cited in Sudhinaraset et al. (2013), despite recommendations by healthcare workers on the use of conventional medicine, individuals seek alternative healthcare citing advantages such as the provision of flexible modalities to cater for medical expenses. Bird et al. (2010) noted that religion plays a vital role in disease management, sickness, and health. In this case, some individuals seek religious intervention to rekindle their hope of getting well (Pretorius & Joubert, 2014). Some indigenous Chinese and Indian alternative medications are also valuable for people with diabetes (Kuan et al., 2011). Jambo et al. (2018) found that most expectant women sought alternative healthcare owing to its effectiveness and fewer side effects.

As much as they have been used since time immemorial, alternative HSB have had setbacks and limitations. According to Adanikin et al. (2014) and Kamaara et al. (2019), spiritual care is inadequate, despite the high demand of expectant mothers. Peltzer et al. (2016), noted that a low understanding of potential outcomes of interactions of particular ethno-medicine with biomedical medications affects management of medical conditions and diseases. As articulated by Chadza et al. (2012), some are inefficient and there have been concerns over efficacy, cases of fake healing, and inherent ideological and epistemological differences in Africa (Abdullahi, 2011). Makulilo (2016) noted a case in which a faith-based

healer discouraged individuals from taking conventional medicine. Mwaura (2019) further noted that alternative HSB in highly spiritualized contexts was counterproductive to disease and illness.

Theoretical Framework

The Health Belief Model (HBM) is a social psychological theoretical model developed in the 1950s by social psychologists in the US Public Health Service to explain why many people failed to participate in public health programs (Metta, 2016; Rosenstock, 1966). It postulates that a person's belief in the personal threat of an illness, together with a belief in the effectiveness of recommended health behaviour, predicts the likelihood of adopting a particular behaviour (Rosenstock, 1974). Metta (2016) argues that the central tenets of HBM are that behaviour is a function of the subjective value of an outcome and of the subjective probability or expectation that a particular action will achieve that outcome. According to Ma (2018), HSB is influenced by perceptions of more benefits and effectiveness, fewer perceived barriers, and more social cues to action. People fear worsening health condition(s), and the choice of HSB mirrors their level of fear and perceived threat. Hence, Janz and Becker (as cited in Martin & DiMatteo, 2014) state that individuals take measures to avert contracting other diseases and undesirable health and social ramifications.

The HBM has been criticized because it simplifies barriers and benefits without specifying the beliefs underlying these

constructs. Besides, according to Harrison et al. (as cited in Martin & DiMatteo, 2014), intentions and self-efficacy are not overly considered and account for social pressures. Nevertheless, the theoretical model is of great significance in enhancing the understanding of why people living with diabetes resort to a particular HSB because it can be used to predict actual behaviour because it recognizes social outcomes (Green et al., 2020).

Research Methodology

This study adopted a convergent mixed-method approach and descriptive-exploratory study design. According to Creswell and Creswell (2018), concerns addressed by social and health sciences are complex; therefore, using either a qualitative or quantitative approach alone could have been inadequate. Furthermore, the mixed-method approach enables the collection of both qualitative and quantitative data to probe and seek explanations for incongruent findings. Descriptive studies provide valid and accurate representations of determinants significant to the set research questions for exploring the attributes of a phenomenon, including the existence of a relationship (Asenahabi, 2019). Exploratory design is the most useful design for studies addressing subjects with high levels of uncertainty or unknown aspects (Kumar, 2011).

Research Setting

The study was conducted in Rongo sub-county, which is one of the ten sub-counties in Migori County, Kenya. It

covers 213.40 km² with a population of 124,587 people and a population density of 584 persons per km² (Kenya National Bureau of Statistics [KNBS], 2019). Rongo sub-county registered a diabetes clinic attendance increment of 27.07% in 2019 (from 658 in 2018 to 1,247 in 2019), which was the highest in Migori County (Migori County Health Department, 2020).

Sampling

Using Yamane's (1967) formula, a sample size of 257 was obtained from a population of 718 persons living with diabetes and attending diabetes clinics in Rongo Sub-County. Three health facilities were purposively selected because they offer diabetes care services. The study used proportionate and simple random sampling to select persons living with diabetes and attending diabetes clinics in the purposively selected health facilities to ensure an equal chance of selection, as shown in Table 1 (Alvi, 2016; Kothari & Garg, 2014). Key informants, comprising nutritionists, pharmacists, public health officers, clinical officers, nurses, and obstetricians, were purposively selected because of their expertise in the subject (Kothari & Garg, 2014; Kumar, 2011).

Table 1**Sampling Criteria**

Health Facility	Population Size	Sample Size	Sample for key Informants
Facility A	317	113	2
Facility B	212	76	2
Facility C	189	68	2
Total	718	257	6

Data Collection

Data collection instruments comprising questionnaires and interview schedules were developed to capture the social outcomes of alternative HSB among persons living with diabetes in Rongo Sub-County. The tools were tested for validity and reliability to enhance their utility and credibility.

$$\text{Content validity index} = \frac{\text{No. of items rated relevant by experts}}{\text{Total no. of items in the instrument}}$$

$$\text{Content validity index} = \frac{19}{23}$$

-.83

Validity

Content validity was ascertained through expert opinion and analysis. Each question was analysed to achieve acceptable face, content, construct, and internal and external validity, as recommended by Cohen et al. (2018). The items were rated on a relevance scale of 1-4 (4-very relevant, 3-quite relevant, 2-some-what relevant, and 1-not relevant). A content validity index of .83 was obtained, which was above the accepted validity threshold of .70. Items rated as relevant by a critical number of panellists were included in the final instrument,

whereas those below the threshold were discarded (Mohajan, 2017; Shekharan & Bougie, 2010).

Reliability

Adequate safeguards against bias were ensured while designing the data collection instruments. The questions were examined and unambiguity was ensured (Kothari & Garg, 2014). The internal consistency reliability recommended for descriptive studies was used (Bolarinwa 2015). It is conservative and requires a single administration; hence, it is most appropriate for testing dynamic behaviours (Taherdoost, 2016). According to Vander-Stoep and Johnston (2009), Cronbach's alpha measures the degree to which items in a questionnaire are related; thus, it reflects how well different items complement each other. The instruments were tested for reliability as computed on SPSS software and Cronbach alpha of .87 was achieved, which was very high reliability; and above the minimum threshold of .70 as recommended by (Garson, 2013)

Piloting. Piloting was conducted in Suna East Sub-County, with twenty-six (26) respondents selected, as recommended by Franzosi et al. (2009).

They argued that between 9% and 10% of a study sample was adequate, while Perneger et al. (2015) recommended less than 30 respondents. Piloting findings were used to modify the tools before the actual study. The ambiguous questions were revised for clarity. In addition, recommendations from the pilot questions were revised for clarity.

Ethical Considerations

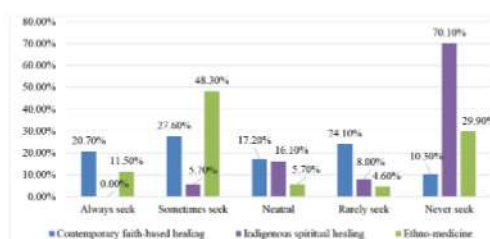
The researcher obtained permission to conduct the study from the National Commission for Science Technology and Innovation (NACOSTI) and the Migori County Government Health Department. We also sought informed consent from respondents who agreed to participate in the study by appending their signatures. They were also informed of the purpose of the study and allowed to exit at any stage.

Results

Respondents were asked to comment on the preferred form of alternative HSB. Based on a 5-point Likert scale, respondents mentioned the form of alternative HSB which they 'always sought,' 'sometimes sought,' 'rarely sought,' and 'never sought.' The forms of alternative HSB investigated were ethno-medicine, contemporary faith-based healing, and indigenous spiritual healing. Quantitative and qualitative data were collected, and the findings were analysed and discussed, as shown in the subsequent sections.

Figure 1

Preference-Seeking Alternative Healthcare



Social Outcomes of Seeking Ethno-medicine

Figure 1 shows that 84 (48.3%) respondents sometimes seek ethno-medicine. This concurs with the findings of Peltzer et al. (2016) and Shivachi (2012), who noted that the utilization of ethno-medicinal services was prevalent; however, their studies did not capture the social outcomes of seeking ethno-medicine (alternative HSB), an aspect this study explored. These findings are attributable to a strong association with sociocultural dynamics and beliefs, as noted by Das et al. (2017), Mbwayo et al. (2013), and Cross & MacGregor (2010). The findings could also be understood from the perspective put forth by the Health Belief Model that belief systems influence individuals' healthcare-seeking behaviours.

The responses from key informant interviews showed that healthcare workers discouraged the utilization of alternative healthcare. Sentiments of KIIs reiterate the findings of Gathara (2018) that most healthcare workers have negative perceptions of ethno-medicine and indigenous spiritual health. However,

one key informant had positive sentiments about alternative HSB, stating that:

I can recommend the use of some herbal medicine when their condition is a bit stable. They can also use prayers but they should share this with their specialists and never forego hospital-based care unless with the prior consent of a specialist. (Key Informant: K-003)

The sentiments of **Key Informant K-003** revealed acknowledgment of ethno-medicine among some healthcare workers, consistent with observations made by Mchidi (2016), who observed that increased nursing education was highly associated with alternative HSB among nurses working in public hospitals in Kakamega County. This could be attributed to increased open-mindedness, since they acknowledged the limitations of biomedical healthcare and the strengths of alternative healthcare. These findings reveal the significance of indigenous therapies, as witnessed in the success of their utilization in Bangladesh (Das et al., 2017), China, India, and Taiwan (Kuan et al., 2011). Respondents also had mixed reactions, some of whom had the following sentiments:

A friend of mine encouraged me to use some herbal medicine which had helped her relative in managing diabetes. I have been using them ever since and it has helped me a lot. (Respondent: R-027)

I have never used herbal medicine... these people nowadays are here to do business. They will not tell

you the side effects of the herbs, as opposed to the doctors who tell us that some drugs will have certain negative effects if used... so you become prepared... you will hear them advertising every day on the radio, but in the past, it was those they helped that advertised them (Respondent: R-103)

The sentiments by **Respondent R-103** demonstrate that ethno-medicine practitioners market their services for awareness creation to penetrate the highly religious community. This also alludes to cues to action, which is one of the tenets of the Health Belief Model.

Respondent 'R-027' was motivated to seek healthcare from ethno-medicine practitioners due to perceived benefits and external cues to action; given the influence from the friend attesting to positive outcomes.

Social Outcomes of Alternative HSB

Figure 1 reveals that respondents preferred seeking ethno-medicine over other forms of alternative HSB. As presented in Table 2, the respondents were asked to comment on the social outcomes of their preferred alternative healthcare. Social outcomes in this study were investigated based on the respondents' ability to relate well with people, acquire life skills, and acquire nutritional knowledge.

Table 2***Social Outcomes of Seeking Ethno-medicine***

Statement	Always seek	Sometimes seek	Neutral	Rarely seek	Never seek	Mean	SD
Able to relate well with people	58 (33.3%)	58 (33.3%)	24 (13.8%)	14 (8.0%)	20 (11.5%)	3.7	1.3
Acquire life skills	68 (39.1%)	56 (32.2%)	22 (12.6%)	10 (5.7%)	18 (10.3%)	3.8	1.3
Acquire nutritional knowledge	62 (35.6%)	64 (36.8%)	14 (8.0%)	20 (11.5%)	14 (8.0%)	3.8	1.3

Table 2 illustrates the extent to which ethno-medicine has enabled people living with diabetes to achieve social outcomes. Respondents agreed that seeking ethno-medicine enabled them to relate well with people (Mean=3.7; SD=1.3), acquire life skills (Mean=3.8; SD=1.3), and acquire nutritional knowledge (Mean=3.8; SD=1.3). These findings confirm the observations of Ondicho et al. (2015) that most patients preferred alternative medications because of perceived better quality services and a deeply rooted belief of efficacy for sustained good health.

From the qualitative data, the respondents cited trust, affordability, convenience, and embedment in the social fabric as motivators. These findings are consistent with the observations of Das et al. (2017) and Ondicho et al. (2015). For instance, one of the respondents said:

‘The herbal medicines are cheap and readily available. They also take their time in explaining how to use them. These herbs were even used by our forefathers so some we know and they help.’ (Respondent: R-149)

Responses from key informant interviews revealed that healthcare workers discouraged the use of ethno-medicine (alternative healthcare). Most healthcare workers asserted that some ethno-medicines were based on myths and lacked scientific proof. They noted that some could be misleading and hence likely to cause more harm than good. This finding could influence HSB and subsequent social outcomes due to the implications of cues to action and efficacy concerns. These findings are contrary to observations made by Shivachi (2012), who noted that healthcare workers were willing to cooperate and learn from ethno-medicine practitioners. These sentiments point to the limitations of alternative HSB, consistent with observations made by Gathara (2018), who noted that healthcare workers were discouraged and had negative attitudes toward the use of alternative healthcare.

Association of Social Outcomes and Alternative HSB

A 2-tailed Pearson correlation was used to examine the association between social

outcomes and preference-seeking ethno-medicine, which showed a strong positive relationship ($r = .60$; $p = .00$), as shown in Table 3.

Table 3

Relationship between Social Outcomes and Ethno-medicine

Social Outcomes		Seeking Ethno-medicine
Able to relate well with people	Pearson correlation	.60
Acquire life skills	Pearson correlation	.51
Acquire nutritional knowledge	Pearson correlation	.51
	Sig. (2-tailed)	.00

Table 3 shows the relationship between social outcomes and preference-seeking ethno-medicine among persons living with diabetes, with a p-value of .00. This shows that social outcomes have a statistically significant and strong positive relationship with preference-seeking ethno-medicine. These findings suggest that individuals are likely to live better with diabetes, as manifested in social outcomes. The findings corroborate the observations of Kuan et al. (2011), where indigenous Chinese medications were used to treat illnesses and were of great value, as also reported by Abdullahi (2011), although the studies did not capture the social outcomes of HSB. The findings also agreed with those of Ondicho et al. (2015), who found that ethno-medicine had high efficacy and perceived better quality services; however, this study did not capture the implications on social outcomes.

On the other hand, the findings were inconsistent with observations made by Chadza et al. (2012) that some were inefficient. Similarly,

Egharevba et al. (2015) found that the lack of standardization of indigenous medications could have negative implications on seeking and utilization of ethno-medicine. Mahomoodally (2013) and Abdullahi (2011) also questioned the inadequate evidence on the efficacy of ethno-medicine and its questionable safety for human health.

Discussion

As shown in Figure 1, the study found that there was a differential preference for sometimes seeking ethno-medicine (48.3%; $M = 3.1$), contemporary faith-based healing (27.6%; $M = 3.2$), and indigenous spiritual healing (5.7%; $M = 1.6$). This was attributable to the drivers behind the respondents' healthcare-seeking behaviour, which included social cues to action, perceived increased benefits of healthcare, perceived increased effectiveness, fewer perceived barriers, perceived susceptibility, perceived severity due to failure to take action, and self-efficacy. This implies that, as ethno-medicine was preferred by many

respondents, the level of displeasure with it was also high. This was also reflected in the Pearson correlation figures for ethno-medicine ($r=.60$; $p=.00$). There was a strong positive correlation between social outcomes and seeking ethno-medicine (Table 3). The qualitative responses revealed that ethno-medicine was relatively cheaper, readily available, affordable, and highly trusted by most respondents.

Conclusion

Based on the findings, the study concludes that there is a strong positive relationship between social outcomes and seeking ethno-medicine (alternative HSB) among persons living with diabetes in the study area. Therefore, there is a need for a well-outlined framework for collaboration between biomedical and alternative healthcare practitioners. This will enable tapping the rich potential of both biomedical and alternative healthcare in the management of diabetes.

References

- Abdullahi, A. A. (2011). Trends and challenges of traditional medicine in Africa. *African Journal of Traditional, Complementary and Alternative Medicines*, 8(5), 115-123.
- Adanikin, A., Onwudiegwu, U., & Akintayo, A. (2014). Reshaping maternal services in Nigeria: Any need for spiritual care? *BMC Pregnancy and Child Birth*, 14(196).
- Alvi, M. H. (2016). A manual for selecting sampling techniques in research. *Munich Personal RePEc Archive*.
- Asenahabi, B. M. (2019). Basics of research design: A guide to selecting appropriate research design. *International Journal of Contemporary Applied Researches*, 6(5), 76-89.
- Ashing-Giwa, K. T., Gonzalez, P., Lim, J., Chung, C., Paz, P., Somlo, G., & Wakabayashi, M. T. (2010). Diagnostic and therapeutic delays among a multi-ethnic sample of breast and cervical cancer survivors. *Cancer*, 116(13), 3195-3204.
- Atun, R., Davies, J. I., Gale, E. A., Bärnighausen, T., Beran, D., Kengne, A. P., Levitt, N. S., Mangugu, F. W., Nyirenda, M. J., Ogle, G. D., Ramaiya, K., Sewankambo, N. K., Sobngwi, E., Tesfaye, S., Yudkin, J. S., Basu, S., Bommer, C., Heesemann, E., Mahne-Goehler, J., ... & Werfalli, M. (2017). Diabetes in Sub-Saharan Africa: From clinical care to health policy. *The Lancet Diabetes & Endocrinology*, 5(8), 622-667.
- Bird, C. E., Conrad, P., Fremont, A. M., & Timmermans, S. (Eds.) (2010). *Handbook of Medical Sociology* (6th Ed.). University Press Nashville.
- Birhanu, Z., Abdissa, A., Belachew, T., Deribew, A., Segni, H., Tsu, V., Mulholland, K., & Russell, F. M. (2012). Health seeking behaviour for cervical cancer in Ethiopia: A qualitative study. *International Journal for Equity in Health*, 11, 83.
- Bolarinwa, O. A. (2015). Principles and methods of validity and reliability testing of questionnaires used in social and health science researches. *The Nigerian Postgraduate Medical Journal*, 22(4), 195-201. <https://doi.org/10.4103/1117-1936.173959>
- Chadza, E., Chirwa, E., Maluwa, A., Malata, A., Kazembe, A., & Chimwaza, A. (2012). Factors that contribute to delay in seeking cervical

- cancer diagnosis and treatment among women in Malawi. *Journal of Health*, 4(11), 1015-1022.
- Cohen, L., Manion, L., & Morrison, K. (2018). *Research Methods in Education* (8th Ed.). Routledge. <https://doi.org/10.4324/9781315456539>
- Creswell, J. W., & Creswell, J. D. (2018). *Research design: Qualitative, quantitative, and mixed methods approaches* (5th Ed.). Sage Publications.
- Cross, J., & MacGregor, H. N. (2010). Knowledge, legitimacy and economic practice in informal markets for medicine: A critical review of research. *Social Science and Medicine*, 71, 1593-1600.
- Das, S., Mia, M. N., Hanifi, S. M. A., Hoque, S., & Bhuiya, A. (2017). Health literacy in a community with low levels of education: findings from Chakaria, a rural area of Bangladesh. *BMC Public Health*, 17, 203.
- Diabetes Declaration and Strategy for Africa (2006). *An integrated strategic plan for diabetes and related health risks*. Summary Document, November 2006.
- Egharevba, H. O., Ibrahim, J. A., Kassam, C. D., & Kunle, O. F. (2015). Integrating traditional medicine practice into the formal health care delivery system in the new millennium- the Nigerian approach: A review. *International Journal of Life Sciences*, 4(2), 120-128.
- Fisher, L., Mullan, J., Arian, P., Glasgow, R. E., Hessler, D., & Masharani, U. (2010). Diabetes distress but not clinical depression or depressive symptoms is associated with glycaemic control in both cross-sectional and longitudinal analyses. *Diabetes Care*, 33(1), 23-28.
- Garson, D. G. (2013). *Hierarchical Linear Modeling: Guide and Applications*. SAGE Publications, Inc. <https://doi.org/10.4135/9781483384450>
- Gathara, P. (2018). Doctors without borders: Why Kenya should give traditional doctors and healers a chance. <https://www.theelephant.info/features/2018/12/28/doctors-without-orders-why-kenya-should-give-traditional-medicine-and-healers-a-chance/>
- Green, E. C., Murphy, E. M., & Gryboski, K. (2020). The Health Belief Model. In *The Wiley Encyclopedia of Health Psychology* (pp. 211-214). John Wiley & Sons, Ltd. <https://doi.org/10.1002/9781119057840.ch68>
- Hegazi, R., El-Gama, L. M., Abdel-Hady, N., & Hamdy, O. (2015). Epidemiology of and risk factors for type 2 diabetes in Egypt. *Annals of Global Health*, 81(6).
- Hjelm, K., & Atwine, F. (2011). Healthcare-seeking behaviour among persons with diabetes in Uganda: An interview study. *BMC International Health and human rights*, 11, 11-19.
- International Diabetes Federation (IDF) (2019). *Diabetes Atlas* (9th Ed.). International Diabetes Federation.
- International Diabetes Federation (IDF) (2011). *The Global Diabetes Plan 2011-2021*. International Diabetes Federation.
- Jambo, A., Mengistu, G., Sisay, M., Amare, F., & Edessa, D. (2018). Self-medication and contributing factors among pregnant women attending antenatal care at public hospitals of Harar town, Ethiopia. *Frontiers in Pharmacology*, 9, 1063.
- Kalra, S., Khandelwal, D., Singla, R., Aggarwal, S., & Dutta, D. (2017).

- Malaria and diabetes. *JPMA the Journal of the Pakistan Medical Association*, 67(5), 810-813.
- Kamaara, E., Nyongesa, P., Ayanga, H. O., Choge-Kerama, E. J., Chelagat, D., Koech, J. K., Mraja, M., Chemorion, E. K., Mothaly, J., Kiyiapi, L., Katwa, J., Odunga, J., & Lemons, J. (2019). Hospital-based spiritual care for mothers of neonates at RMBH in Eldoret, Kenya: A situational analysis. *Health and Social Care Chaplaincy*, 7(2), 145-167.
- Kasaie, P., Weir, B., Schnure, M., Dun, C., Pennington, J., Teng, Y., Wamai, R., Mutai, K., Dowdy, D., & Beyrer, C. (2020). Integrated screening and treatment services for HIV, hypertension and diabetes in Kenya: Assessing the epidemiological impact and cost-effectiveness national and regional perspective. *Journal of the International AIDS Society*, 23(1), 17-29.
- Kenya National Bureau of Statistics (2019). *2019 Kenya Population and Housing Census Volume IV: Distribution of Population by Socio-Economic Characteristics*. Government Printers, Nairobi-Kenya.
- Kleinman, A. (2020). *The illness narratives: Suffering, healing, and the human condition* (2nd Ed.). Basic Books.
- Kothari, C. R., & Garg, G. (2014). *Research methodology and techniques* (3rd Ed.). New Age International Publishers.
- Kuan, Y. C., Yen, D. J., Yiu, C. H., Lin, Y. Y., Kwan, S. Y., Chen, C., Chou, C., & Yu, H. Y. (2011). Treatment-seeking behaviour of people with epilepsy in Taiwan: A preliminary study. *Epilepsy and Behaviour*, 22(2), 308-312.
- Kumar, R. (2011). *Research methodology: A step-by-step guide for beginners* (3rd Ed.). Sage Publications.
- Mahomoodally, M. F. (2013). Traditional medicines in Africa: An appraisal of ten potent African medicinal plants. *Evidence-Based Complementary and Alternative Medicine*, 2013.
- Makulilo, A. (2016). You must only drink one cup: Revisiting the tension between 'kikombe cha Babu' and biomedicine in Tanzania. *The African Review*, 45 (2): 94-108.
- Martin, L. R., & DiMatteo, M. R. (2014). *The Oxford handbook of health communication, behaviour change, and treatment adherence*. Oxford University Press.
- Mbwayo, A. W., Ndetei, D. M., Mutiso, V., & Khasakhala, L. I. (2013). Traditional healers and provision of mental health services in cosmopolitan informal settlements in Nairobi, Kenya. *African Journal of Psychiatry*, 16, 134-140.
- Mchidi, N. K. (2016). Health seeking behavior among nurses working in public hospitals in Kakamega County, Kenya [Thesis, Kenyatta University]. <https://ir-library.ku.ac.ke/handle/123456789/15333>
- Metta, E. O. (2016). Health-seeking behaviour among adults in the context of the epidemiological transition in South-Eastern Tanzania: A focus on malaria and diabetes. *Groningen: University of Groningen*.
- Migori County Health Department (2020). Routine diabetes mellitus clinic attendance 2019-2020.
- Mohajan, H. K. (2017). Two criteria for good measurements in research: Validity and reliability. *Annals of Spiru Haret University. Economic Series*, 17(4), 59-82.

- Mwaura, P. N. (2019). Spiritual warfare and healing in Kenyan Neo-Pentecostalism. *Pentecostalism, Catholicism, and the Spirit in the World*, 8 (81).
- National Institute of Diabetes and Digestive and Kidney Diseases (2020). *Health Information*. Retrieved from National Institute of Diabetes and Digestive and Kidney Diseases: <https://www.niddk.nih.gov/health-information/diabetes/overview/what-is-diabetes>.
- Nimesh, V. V., Halder, A., Mitra, A., Kumar, S., Joshi, A., Joshi, R., & Pakhare, A. (2019). Patterns of healthcare-seeking behaviour among persons with diabetes in Central India: A mixed method study. *Journal of Family Medicine and Primary Care*, 8, 677-683.
- Ondicho, J., Ochora, J., & Matu E. (2016). Factors associated with use of herbal medicine among patients in herbal clinics in Gucha District, Kenya. *Scientific Conference Proceedings*.
- Peltzer, K., Pengpid, S., Puckpinyo, A., & Yi, S. (2016). The utilization of traditional, complementary and alternative medicine for non-communicable diseases and mental disorders in health care patients in Cambodia, Thailand and Vietnam. *BMC Complementary and Alternative Medicine*, 16(1), 1-11.
- Perneger, T. V., Courvoisier, D. S., Hudelson, P. M., & Gayet-Ageron, A. (2015). Sample size for pre-tests of questionnaires. *Quality of Life Research: An International Journal of Quality of Life Aspects of Treatment, Care and Rehabilitation*, 24(1), 147-151. <https://doi.org/10.1007/s11136-014-0752->
- Pretorius, C., & Joubert, N. (2014). The experiences of individuals with multiple sclerosis in the Western Cape, South Africa. *Health SA Geondhed*, 19(1).
- Rosenstock, I. M. (1974). The Health Belief Model and preventive health behaviour. *Health Education Monographs*, 2, 354-86.
- Rosenstock, I. M. (1966). Why people use health services. *Milbank Memorial Fund Quarterly*, 44, 94-127.
- Sarwar, N., Gao, P., Seshasai, S., Gobin, R., Kaptoge, S., & Angelantonio, D. (2010). Diabetes mellitus, fasting blood glucose concentration, and risk of vascular disease: A collaborative meta-analysis of 102 prospective studies. *Emerging Risk Factors Collaboration. Lancet*, 26(375), 2215-2222.
- Shekharan, U., & Bougie, R. (2010). *Research Methods for Business: A Skill Building Approach* (5th Ed.). John Wiley.
- Shivachi, T. I. (2012). The role of ethno-medicine in the provision of primary healthcare: The case of Iguhu Location, Kakamega North District, Kakamega County, Kenya. *Master's Thesis*, Kenyatta University, Kenya.
- Shivachi, T., & Sidha, Z. (2019). Devolution and gender responsive service delivery in Kenya: A gender analysis of Siaya County. *The International Journal of Humanities and Social Studies*, 7(7), 352-357.
- Sibuor, J. O. (2018). Responsiveness of health care systems on elderly optimal ageing in rural Kenya: The case of Rachuonyo North Sub County of Homa Bay County. *Doctoral Dissertation*, Rongo University.

- Shin, J. Y., Choi, N. K., Jung, S. Y., Kim, Y. J., Scong, J. M., & Park, B. J. (2011). Overlapping medication associated with healthcare switching among Korean elderly diabetic patients. *Journal of Korean Medical Science*, 26(11), 1461-1468.
- Sudhinaraset, M., Ingram, M., Lofthouse, H. K., & Montagu, D. (2013). What is the role of informal healthcare providers in developing countries? A systematic review. *PLoS ONE*, 8(2).
- Sultana, M., Sarker, A.B., Sheikh, N., Akram, R., & Ali, N. (2019). Prevalence, determinants and health care-seeking behaviour of childhood acute respiratory tract infections in Bangladesh. *PloSONE*, 14(1).
- Taherdoost, H. (2016). Validity and reliability of the research instrument: How to test the validation of a questionnaire/ survey in a research. *International Journal of Academic Research in Management (IJARM)*, 5(3):28-36.
- Tomar, B. S. (2016). Integration of the traditional medicine of the individual country to modern medicine is the better way of medical health care. The 5th Global Congress for Consensus in Paediatrics and Child Health. Xian China, CIP 2016.
- Topp, S. M., & Abimbola, S. (2018). Call for papers: The Alma Ata Declaration at 40: Reflections on primary healthcare in a new era. *BMJ Global Health*, 3 (2).
- Vanderstoep, S. W., & Johnston, D.D. (2009). *Research methods for everyday life: Blending qualitative and quantitative approaches*. Jossey-Bass.
- Vashist, S. K., & Luong, J. H. T. (Eds.) (2017). *Point-of-care glucose detection for diabetic monitoring and management*. Taylor and Francis Group.
- Verginer, L., & Juen, B. H. (2018). Spiritual explanatory models of mental illness in West Nile, Uganda. *Journal of Cross-Cultural Psychology*, 50(2), 233-253.
- Winkler, A. S., Mayer, M., Schnaitmann, S., Ombay, M., Mathias, B., Schmutzhard, E., & Jilek-Aall, L. (2010). Belief systems of epilepsy and attitudes toward people living with epilepsy in a rural community of Northern Tanzania. *Epilepsy and Behaviour*, 19, 596-601.
- World Health Organization. (2021). *World Health Organization Fact Sheet*. World Health Organization: <https://www.who.int/news-room/fact-sheets/detail/diabetes>.
- Yamane, T. (1967). *Statistics: An introductory analysis* (2nd Ed.). Harper.