

American Journal of Communication (AJC)



**The Influence of Interpersonal Communication
Participants on Child Nutrition Promotion in Kilifi
County, Kenya**

Florence Tsuma, Prof. Hellen Mberia, Prof. Idah Muchunku



The Influence of Interpersonal Communication Participants on Child Nutrition Promotion in Kilifi County, Kenya



Florence Tsuma¹, Prof. Hellen Mberia², Prof. Idah Muchunku³

¹Technical University of Mombasa

²Jomo Kenyatta University of Agriculture and Technology

³Multimedia University of Kenya



Article history

Submitted 15.01.2024 Revised Version Received 29.02.2024 Accepted 04.04.2024

Abstract

Purpose: This study analyzed the influence of Interpersonal Communication participants in the promotion of child nutrition in Kilifi County, Kenya.

Materials and Methods: The study which was guided by the Social Penetration Theory and employed the mixed methods research design. A sample of 10 Health Professionals drawn from Public Healthcare facilities and 247 residents with children aged 5 years and below was drawn from Ganze Constituency in Kilifi County. Data was collected through questionnaires and interviews. Quantitative data was analyzed using descriptive and inferential statistics while thematic analysis was used to analyze qualitative data. Data was presented in tabular form.

Findings: The study found that multiple sources of child nutrition information existed and influenced the nutrition of a child in different degrees. Such sources included Health Professionals, Family members, Male care givers, opinion leaders and peers. Among these sources Health professionals were identified as the most preferred source of child nutrition information.

Additionally, findings indicated that Interpersonal Communication participants largely contributed to the promotion of complementary feeding and an understanding of the effects of malnutrition.

Implications to Theory, Practice and Policy: This study recommends that mechanisms should be put in place to monitor and evaluate messages emanating from informal sources of child nutrition information in order to negate any false narratives that can counter strides made in the promotion of child nutrition emanating from such sources. This study also recommends that Health Professionals should invest in developing a positive relationship with patients so as to increase the depth and breadth of child nutrition information they can provide.

Keywords: *Interpersonal Communication, Child Nutrition Promotion*

1.0 INTRODUCTION

Wood (2012) defines Interpersonal Communication (IPC) participants as the parties involved in the communication cycle of encoding, transmitting and decoding of messages and providing feedback. Within the context of health communication, researchers such as Ball, Duncanson, Burrows, & Collins (2017) indicate the existence of several sources of Child Nutrition Information (CNI) such as family, peers, Health Professionals (HPs) and community opinion leaders such as elders, midwives and Community Health Volunteers (CHVs).

Faye, Fonn & Murage (2019) note that child nutrition decisions are influenced by a myriad of both formal and informal actors. Faye et al, (2019) argued that child health and feeding decisions are influenced not only by the mother, but by other actors such as the oldest or extended family member, grandparents, the mother's confidants and, HPs. Faye et al, (2019) however noted that though there is a general consensus on the reality that a mother is not fully in control of child feeding decisions especially in third world countries; limited research studies have been carried out on household and community factors that influence child nutrition practices; yet it is at these levels that hierarchical authority and informal communication networks operate and may influence child nutrition practices. Additionally, Faye et al (2019) noted that the significance and influence of such indirect actors, such as fathers and grandmothers has been overlooked by both communicators and scholars.

The influence of multiple CNI sources cannot be under rated; Paintal & Aguayo (2016) noted that mothers/caregivers often turned to informal sources such as to family members and community elders for counsel on child nutrition especially special' feeding practices when a child was ill. Within our own social groups, some people are more influential than others, particularly those in the group who are in high status (Seidman, 2020). People with high status i.e. power (particularly as a result of which is a product of inequality in education, financial ability or socially constructed gender norms) enjoy an imbalance in relationship roles and positions creating an "influencer-influencee" relationship with one dominating and influencing the other with minimal resistance (Simpson, Farrell, Oriña & Rothman, 2015).

The other IPC participant is the opinion leader. The opinion leader as a tool of influence has been adopted in various fields including the field of communication and public health (Bamakan, 2019). These individuals are considered to be role models who are credible, respectable, and trustworthy; thus wielding the power to influence the uptake of new innovations at a hastened pace (Weissman, Nguyen, Nguyen & Mathisen, 2020). Globally, opinion leaders have had a hand in promoting evidence-based health care practice and disease prevention (Bamakan, 2019). Weissman et al., (2020) noted that the use of local opinion leaders resulted in an increase in compliance leading to improved health care outcomes.

HPs are IPC participants that have the ability to influence child nutrition and are also professionally mandated to do so. Norouzinia, Aghabarari, Shiri, Karimi, & Samami, (2015) noted that the perceived quality health care services are measured against nurse-patient relationship and communication skills and this determined the impact of procedures recommended to patients.

Problem Statement

According to Marra, Breeze, Catona (2022), a child usually interacts with multiple other caregivers over the course of his/her development and these caregivers alongside the mother greatly influence the children's dietary behaviours. Similarly, Faye et al (2019) noted that child health and feeding decisions are influenced not only by the mother, but by other actors such as the oldest or extended family member, grandparents, the

mother's confidants and HPs. Faye et al, (2019) however noted that though there is a general consensus on the reality that a mother is not fully in control of child feeding decisions especially in third world countries; limited research studies have been carried out on household and community factors that influence child nutrition practices; yet it is at these levels that hierarchical authority and informal communication networks operate and may influence child nutrition practices. Additionally, Faye et al (2019) noted that the significance and influence of such indirect actors, such as fathers and grandmothers has been overlooked by both communicators and scholars.

In developing societies, the traditional community setup comprising of extended and multigenerational family systems is very visible more so in the rural areas, where older, more knowledgeable women are tasked with transmitting socio-cultural norms, thus, caregiving becomes a community task (Aubel, 2012). However many child nutrition initiatives as well as communication and health research, overlook this and fail to take into account the role played by informal, non-expert information sources within social structure (family, kinship, relationships, hierarchies) and the normative structure (values and beliefs) that influence an individuals' behaviour. Merlino (2017) argued that in order to promote gainful transformation in healthcare, effective vertical, horizontal and diagonal communication must be incorporated in all aspects of care delivery. This study therefore sought to analyze the influence of both formal and informal IPC participants in the promotion of child nutrition in Kilifi County, Kenya.

2.0 LITERATURE REVIEW

The Social penetration theory (SPT) describes the formation and progression of interpersonal relationships. Developed by Altman and Taylor in 1973, SPT suggests that as people interact with one other, they tend to reveal information about themselves through a process referred to as "self disclosure. The revelation of such personal information leads to an increase in the depth and breadth of self-disclosure as IPC participants get to know each other and advance through the stages of relational development (Pennington, 2015). SPT is commonly explained by the onion analogy which denotes people's personalities as onions, closed off and made up of many distinct layers; as people interact, they move through the layers by peeling off the outer ones as they progress towards the inner layers which are characterized by higher levels of intimacy (Pennington, 2015). As the relationships advances, IPC participants get to know more about each other and at a deeper level, thus they move from shallow levels of self-disclosure to more intimate disclosures characterized by an increase in breadth and depth of information shared (Altman & Taylor as cited in McCarthy, 2009).

The SPT suggests four layers of disclosure: surface, periphery, intermediate, and central (Altman & Taylor, 1975). Taylor and Altman (1975) suggest that surface level disclosures are general, superficial and casual in nature and can comfortably be exchanged with anyone irrespective of the presence or lack of a relationship with them while peripheral layer disclosures are generalized information is shared in most social setups that lack intimacy. The third Intermediate layer involves greater revelation of the self and the conversation becomes more intimate. The final layer is the central layer which includes sensitive, intimate and secretive private information that is only shared with a select few close friends or family (Taylor & Altman, 1987).

SPT predicts that as a relationship develops, relational partners move through these layers gradually and systematically (Altman & Taylor, 1973). The motivation to self-disclose is determined by an individual's analysis of cost verses benefits of disclosure; the more satisfied an individual is on the state of the

relationship, the more committed they will be to the relationship and the higher their degree of self-disclosure (Taylor & Altman, 1987).

This theory was relevant to this study which sought to examine the influence of IPC participants in the promotion of child nutrition in Kilifi County, Kenya. As people interact in an interpersonal context, they reveal information based on their level of interaction (layer) moving from the surface layer to the central layer and from the orientation to the stable exchange stage as they increase the depth and breadth of information they share. IPC is a key component of health communication, for this reason, developing a socially penetrative relationship between IPC participants critical for child nutrition promotion.

3.0 MATERIALS AND METHODS

In evaluating the influence of IPC message participants on child nutrition promotion in Kilifi County. Ganze constituency of Kilifi County was purposely chosen for this study as it was the most food insecure constituency in Kilifi County (National Drought Management Authority [NDMA], 2019). A sample size of 10 Health Professionals (HPs) was drawn using the Purposive sampling technique. This sample consisted of HPs attached to the children's unit or those who interacted with patients. According to Battaglia (2011), purposive sampling is highly effective if used in the selection of a small sample with possess a certain unique characteristic. A second sample of 247 respondents consisting of residents with children aged 5 years and below was determined using the multistage sampling technique as patient records which are confidential documents were not availed to the researcher. According to Sedgwick (2015), multistage sampling is widely used in health research where no sampling frame exists or where the research population geographically scattered. Multistage sampling incorporates the use of two or more stages of random sampling based on the hierarchical structure of natural clusters within the population (Sedgwick, 2015). In this study the first stage involved a random selection of hospital attendees with children aged 0-5 years in each administrative ward. In the second stage, a random sample of literate persons was obtained. In the final stage respondents were selected based on prior exposure to CNI. The Mixed Methods Research (MMR) design was adopted. MMR entails the collection of both quantitative and qualitative data using distinct tools of data collection before analyzing the data to establish correlation. Key informant interviews were used to gather qualitative data from the sample of 10 HPs whereas the Survey method was used to gather quantitative data from the sample of 247 respondents.

4.0 FINDINGS

This study examined the influence of IPC participants on child nutrition promotion in Kilifi County, Kenya. This was founded on the premise that child nutrition is influenced by people within the community. To establish the origin of CNI, respondents were asked to identify their preferred source of such information.

Table 1: Preferred Sources of CNI

	Frequency	Percent
Family members	64	25.9
Peers/ Friends	49	19.8
Opinion leaders e.g. community midwife, village elders, CHV	24	9.7
Health Personnel e.g doctors, nurses, clinical officers	110	44.5
Total	247	100.0

HPs were identified as the most preferred source of CNI by 44.5% of respondents while opinion leaders were identified as the least preferred source of CNI by only 9.7% of respondents. This study further sought to determine the extent of influence for each of the sources identified in Table 1.

Table 2: Influence of IPC Participants on Child Nutrition Decision Making

	Family Members	Fathers/ Male Caregivers	Peers	Opinion Leaders	Health Personnel
Strongly Disagree	2.0	8.9	5.3	10.5	.4
Disagree	1.6	35.2	21.5	13.4	1.6
Neither Agree nor Disagree	13.4	25.9	27.1	32.4	9.7
Agree	20.2	5.7	35.2	35.6	33.6
Strongly Agree	62.8	24.3	10.9	8.1	54.7
Total	100.0	100.0	100.0	100.0	100.0

Majority of respondents (62.8 %) strongly agreed that family members influenced their child nutrition decisions. These research findings were supported by a studies conducted by Aubel (2012) and Faye, Fonn & Murage (2019) which revealed that grandmothers played a vital role as mentors and advisors to new mothers and contributed to infant rearing practices especially in non-western societies. 54.7% of respondents strongly agreed that HPs influenced their child nutrition decisions while only 0.4% of respondents strongly disagreed. These findings revealed that HPs other than being cited as the most preferred source of CNI (Table 1) were also a highly influential source of CNI.

35.2% of the respondents disagreed with the statement “The father/ male caregiver plays an influential role in child nutrition” while 25.9 % were undecided as they neither agreed nor disagreed. However, 24.3% strongly agreed with the statement. These results indicated that respondents felt that the role of child nutrition rested majorly on the shoulders of the mother or of female care givers. To ascertain whether HPs also relied on informal sources for CNI, interviewees were asked whether they had learnt anything new about child nutrition from the local residents/ patients. They all stated that they had not. The following are excerpts from the interviewees:

Interviewee 2: *When you interact with people as a medic, they usually want to get information or to clarify something but not to give you information.*

Interviewee 5: *I can't say I have learnt something new about child nutrition, but at least I have been able to understand their reasoning on why they feed their children certain foods*

Interviewee 7: *We are usually trained by the county government. In case there is some new information, they organize for a workshop which we attend or circulate the recommended procedure as a document and then we read it.*

This is concurrent with Ndiema (2021) study also revealed that HPs mainly sourced for CNI from care manuals and basic pediatric guidelines booklets, Infant and Young Child Feeding (IYCF) handouts which were readily available online. Interviewees were also asked to identify people in the local community who

viewed themselves as experts in child nutrition and rate the credibility of information from those sources. The following are excerpts from the interviewees:

Interviewee 1: *“Some Traditional birth attendants provide outdated and misleading information. Some tell the mother not to eat heavy meals so that the baby does not grow to be too big so that the birthing process is easier on the mother. They don’t realize that this affects the health of both the baby and the mother. That is why we have a large population of malnourished children”*

Interviewee 7: *“Chiefs, they may have good intentions but they may not have the right information. If they notice something is wrong, they should direct the mother here”*

Interviewee 10: *“Grandparents or Mother in laws. This group can be very misleading especially to first time mothers who often trust them.”*

To establish whether HPs regarded themselves as credible sources of CNI, Interviewees were asked whether they viewed themselves as credible sources of CNI. They all responded in the affirmative citing their professional training as the source of their credibility. This proved that HPs had no doubt that they were the most knowledgeable individuals who were best suited to positively influence child nutrition. To establish the extent to which the respondent’s nutrition specific interventions were influenced by IPC participants, respondents were asked to indicate their level of agreement or disagreement to the following statements.

Table 3: Influence of IPC Participants on Nutrition Specific Interventions **Strongly Disagree**
Neither agree Agree Strongly

	disagree	nor disagree	strongly agree	
Interacting with other people has made Exclusively Breastfeed my child	3.2	27.9	41.3	18.2
Interacting with other people has made me continue breastfeeding even as I introduce solid food	.4	1.6	9.7	33.6
Interacting with other people has made me to give my child a balanced diet comprising of a variety of carbohydrates, vegetables, fruits and proteins	6.5	44.9	32.0	14.2
Interacting with other people has made me understand the causes of malnutrition in children	9.3	56.7	28.3	4.0
Interacting with other people has made me understand effects of malnutrition in children	.4	5.3	17.8	46.6
Interacting with other people has made me understand the signs and symptoms of malnutrition in children	18.6	44.9	28.3	8.1
Interacting with other people has made me understand how to prevent my child from becoming malnourished	11.7	19.8	28.3	25.9
Interacting with other people has made me know what to do incase my child develops malnutrition	2.0	13.4	27.5	36.0
				21.1

The results indicated that IPC participants largely contributed to the promotion of complementary feeding and an understanding of the effects of malnutrition with 88.3% and 76.6% of respondents at least agreeing to the statements “Interacting with other people has made me continue breastfeeding even as I introduce solid food” and “Interacting with other people has made me understand effects of malnutrition in children” respectively. These findings prove respondents were aware of the benefits of breastfeeding and though they were not keen to Exclusively Breast Feed (27.5% of respondents at least agreed with the statement “IPC has made me understand the causes of malnutrition in children”) breastfeeding (not necessarily EBF) was an important component in the fight against malnutrition. These findings resonate with those of a study conducted by Mohamed, Ochola, & Owino (2020) which revealed that although mother’s attitude towards EBF is largely positive, several individual and cultural factors hindered mothers from practicing it.

Statistical Analysis for IPC Participants and Effective Child Nutrition Promotion

Correlation, Regression and ANOVA analysis were conducted in order to determine the relationship IPC Participants and Effective Child Nutrition Promotion as well as to test the research hypothesis: There is no statistically significant influence of IPC participant on the effectiveness of child nutrition promotion in Kilifi County- Kenya. Results were as follows:

Table 4: Correlation Analysis for IPC Participants and Effective Child Nutrition Promotion

		IPC Participants	Child Nutrition Promotion
IPC Participants	Pearson Correlation	1	.565**
	Sig. (2-tailed)		.000
	N	247	247
Child Nutrition Promotion	Pearson Correlation	.565**	1
	Sig. (2-tailed)	.000	
	N	247	247

**. Correlation is significant at the 0.05 level (2-tailed).

The findings of the correlations analysis indicated that there was a significant positive relationship between IPC Participants and Child Nutrition since the correlation coefficient is 0.565 ($r=0.565$, $p=0.000 < 0.05$) and the relationship is relatively strong since the value of $r=0.565$ approaches to one at which there is strong correlation.

Table 5: Regression Model Summary for IPC Participants

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.565 ^a	.320	.317	.35236

Since the adjusted R^2 is 0.317. only 31.7% of child nutrition would be explained by IPC participants and the remaining 68.3% of child nutrition was due to other factors that were not included in this model

Table 6: Regression Analysis Coefficients for IPC Participants

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1	(Constant)	1.532	.154	9.938	.000

IPC Participants	.559	.052	.565	10.729	.000
------------------	------	------	------	--------	------

a. Dependent Variable: Child Nutrition Promotion

The regression model is statistically significant since $p=0.000<0.05$. Thus, the model fits to predict the dependent variable. Therefore, the model can be expressed as $Y=1.532+0.559X$, where Y = Child nutrition and X = IPC Participants.

Table 7: ANOVA analysis for IPC Participants

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	14.291	1	14.291	115.101	.000 ^b
Residual	30.419	245	.124		
Total	44.710	246			

a. Dependent Variable: Child Nutrition Promotion

b. Predictors: (Constant), IPC Participants

The regression model is significantly fitted to predict the dependent variable since $F_{1,245;0.05}=3.85<115.101$ with $p=0.000<0.05$. Hence, IPC Participants did have influence on Child Nutrition. Therefore, based on the findings of these statistical analysis (Correlation, Regression and ANOVA) the research hypothesis “There is no statistically significant influence of IPC participants on the effectiveness of child nutrition promotion in Kilifi County- Kenya was rejected.

5.0 CONCLUSION AND RECOMMENDATIONS Conclusion

This study’s results revealed that there exists several formal and informal sources of CNI, such sources included family members, fathers/ male caregivers, peers, opinion leaders and health personnel. HPs were identified as the most influential source of CNI, followed by family members and peers respectively, while male caregivers were identified as the least preferred source of CNI. HPs were cited as the most preferred due to their professional expertise. Additionally, HPs viewed themselves as the only credible source of CNI. They viewed informal CNI sources of misleading and outdated information and thus stumbling blocks in the war against malnutrition. Overall the study determined that IPC participants largely contributed to the promotion of complementary feeding and an understanding of the effects of malnutrition.

Recommendations

The County Government of Kilifi (CGK) should intentionally invest in educating and training HPs as they are heavily relied on by members of the public for CNI. The CGK should also recognize that alternative sources of CNI exist in the form of family members, opinion leaders and peers and the influence of such sources should not be undermined. Mechanisms should be put in place to monitor and evaluate messages emanating from such sources in order to negate any false narratives that can counter strides made in the promotion of child nutrition emanating from such sources.

HPs should recognize that the child nutrition decisions of the patients they interact with are influenced by a myriad of other informal and non-expert sources. They should therefore invest in developing a positive relationship with patients as proposed by the SPT so as to increase the depth and breadth of CNI that they can provide. Communicators should recognize and appreciate the influence of both formal and informal sources of CNI. When composing and disseminating child nutrition messages, they should seek to provide

content that addresses information gaps/ loopholes left or even misinformation across the various CNI source categories. Additionally, Communication scholars should analyze the messages disseminated by each CNI source category so as to establish message quality, gaps and misinformation. This information will enable communicators and HPs to know how best to structure their child nutrition messages.

REFERENCES

Aubel J. (2012). The role and influence of grandmothers on child nutrition: culturally designated advisors and caregivers. *Maternal & Child Nutrition*. 8(1):19–35

Altman, I., & Taylor, D. A. (1973). *Social penetration: The development of interpersonal relationships*. New York: Holt, Rinehart, & Winston.

Ball, R., Duncanson, K., Burrows, T., & Collins, C. (2017). Experiences of Parent Peer Nutrition Educators Sharing Child Feeding and Nutrition Information. *Children*, 4(9), 78.
Doi:10.3390/children4090078

Bamakan SMH, Nurgaliev I & Qu Q. (2019). Opinion leader detection: a methodological review. *Expert System Application*.115:200–22. DOI:10.1016/j.eswa.2018.07.069

Battaglia, M. (2011). *Encyclopedia of Survey Research Methods*. Thousand Oaks: Sage Publications, Inc.

Faye, C., Fonn S., & Murage, E. (2019). Family influences on child nutritional outcomes in Nairobi's informal settlements. *Child: Care, health and development*. 45(4): 509-517
<https://doi.org/10.1111/cch.12670>

Marra, C., Breeze, P., & Catona, S. (2022). A comparison between parent and grandparent dietary provision, feeding styles and feeding practices when caring for preschool-aged children. 168. ISSN 0195-6663. Retrieved from:
<https://www.sciencedirect.com/science/article/pii/S019566632100684X>

McCarthy A. (2009). Social Penetration Theory, Social Networking and Facebook. *Fairfield University*. Retrieved: http://www.anniemccarthy.net/uploads/1/5/0/4/1504159/2009-aprilsocial_penetration_theory_and_facebook.pdf

Merlino, J. (2017). Communication: A Critical Healthcare Competency. Retrieved from:
<https://www.psqh.com/analysis/communication-critical-healthcare-competency/>

Mohamed, M.J., Ochola, S. & Owino, V.O. (2020). A Qualitative Exploration of the Determinants of Exclusive Breastfeeding (EBF) Practices in Wajir County, Kenya. *Int Breastfeed J* 15, 44
<https://doi.org/10.1186/s13006-020-00284-x>

Norouzinia, R., Aghabarari, M., Shiri, M., Karimi, M., & Samami, E. (2015). Communication Barriers Perceived by Nurses and Patients. *Global journal of health science*, 8(6), 65.

Ndiema, N. (2021). Nutritional assessment practices among health care workers at the paediatric emergency unit at Kenyatta National Hospital, Nairobi County, Kenya. (Masters Thesis, Jomo Kenyatta University of Agriculture and Technology, Kenya). Retrieved from: <http://ir.jkuat.ac.ke/handle/123456789/5558>

NDMA. (2019). Kilifi County 2018 Short Rains Food Security Assessment Report. Retrieved from: <https://www.ndma.go.ke/index.php/resource-center/send/61-2019/5116-kilifi-sra-2019>

Paintal, K. & Aguayo, V. (2016). Feeding practices for infants and young children during and after common illness. Evidence from South Asia. *Maternal and Child nutrition*. 12(1). 39-71 <https://doi.org/10.1111/mcn.12222>

Pennington N. (2015). Building and Maintaining Relationships in the Digital Age: Using Social Penetration Theory to Explore Communication through Social Networking Sites. Unpublished manuscript. Retrieved from: <https://kuscholarworks.ku.edu>

Sedgwick, P. (2015). Multistage sampling. BMJ(Online).351. DOI: 10.1136/bmj.h4155

Seidman, G. (2020, March 19). The Best Tactics for Convincing People to Stop the Spread Part 1&2: How do you convince people to take precautions against COVID-19? [Blogpost]. Retrieved From: <https://www.psychologytoday.com/us/blog/close-encounters/202003/the-best-tactics-convincingpeople-stop-the-spread>

Simpson, J. A., Farrell, A. K., Oriña, M. M., & Rothman, A. J. (2015). Power and social influence in relationships. In J. A. Simpson & J. F. Dovidio (Eds.), *APA handbook of personality and social psychology: Interpersonal relations* (pp. 393–420). Washington, DC: American Psychological Association

Taylor, D., & Altman, I. (1987). Communication in interpersonal relationships: Social penetration processes. In M. Roloff and G. Miller (Eds.), *Interpersonal processes: New directions in communication research* (pp. 257-277), Newbury Park, CA: Sage.

Weissman, A. Nguyen, T., Nguyen, H., Mathisen, R. (2020). The Role of the Opinion Leader Research Process in Informing Policy Making for Improved Nutrition: Experience and Lessons Learned in Southeast Asia. *Current Developments in Nutrition*. 4(6). [nzaa093,https://doi.org/10.1093/cdn/nzaa093](https://doi.org/10.1093/cdn/nzaa093)

Wood, J. (2012). *Interpersonal Communication: everyday encounters*. Cengage: Boston.

License

Copyright (c) 2024 Florence Tsuma, Prof. Hellen Mberia, Prof. Idah Muchunku



This work is licensed under a [Creative Commons Attribution 4.0 International License](https://creativecommons.org/licenses/by/4.0/).

Authors retain copyright and grant the journal right of first publication with the work simultaneously licensed under a [Creative Commons Attribution \(CC-BY\) 4.0 License](https://creativecommons.org/licenses/by/4.0/) that allows others to share the work with an acknowledgment of the work's authorship and initial publication in this journal.