

Effect of Disease Education on Knowledge and Attitude of Nursing Mothers towards Typhoid Prevention in Akinyele Local Government Area of Oyo State, Nigeria

S Aderemi Famuyiwa ^{a*} , F Moses Ogundokun ^b, S Dusin Oloruntegbe ^a

^a Department of Health Education, University of Ibadan, Ibadan, Nigeria.

^b Department of Counselling and Human Development Studies, University of Ibadan, Ibadan, Nigeria.

ARTICLE INFO

ORIGINAL ARTICLE

Article History:

Received: 21 Apr 2022

Revised: 10 May 2022

Accepted: 30 May 2022

*Corresponding Author:

S Aderemi Famuyiwa

Email:

famrem01@gmail.com

Tel: 07060518704

Citation:

Famuyiwa S.A, Ogundokun M.O, Oloruntegbe D. S. Effect of Disease Education on Knowledge and Attitude of Nursing Mothers towards Typhoid Prevention in Akinyele local Government Area of Oyo State, Nigera. Journal of Social Behavior and Community Health (JSBCH). 2022; 6(1): 826-834.

ABSTRACT

Background: Typhoid fever is a disease is most predominant with great mortality among children of under five years of age especially in low and middle income countries where poor sanitation and poor hygiene lead to transmission of the disease. This study is focused on determining the effects of disease education on knowledge and attitude towards typhoid prevention among nursing mothers in Akinyele Local Government area of Oyo state.

Methods: The research design for this study was pretest-protest control group, quasi-experimental research design using 2×2 factorial matrix. The study used factorial matrix design based on the fact that the study involved the use of independent variables at two levels; treatment and control. Moderating variable of educational background at two levels (none formal education and formal education), multistage sampling procedure was adopted to select participants of two hundred (200) registered nursing mothers as sample. A self-developed questionnaire was used for data collection with reliability value of 0.72. the inferential statistics of analysis of covariance (ANCOVA) to test the hypotheses at 0.05 alpha level.

Result: The result from the study revealed that there was significant main effect of treatment on knowledge and attitude of nursing mothers towards typhoid prevention among nursing mothers in Akinyele Local Government, Oyo State with ($F_{(1/170)} = 12.82, p < .05, \eta^2 = 0.07$). ($F_{(1/170)} = 271.99, p < .05, \eta^2 = 0.62$) respectively.

Conclusion: It was concluded that disease education was very effective and has positive influence in improving the knowledge and attitude of nursing mothers towards typhoid prevention in Akinyele Local Government Area of Oyo State., Recommendation was made that there is need for massive health education campaign to educate the nursing mothers and generality of the populace by governmental and non-governmental agencies to correct the wrong perception they have about malaria and typhoid fever for effective prevention, treatment and control of the diseases.

Keywords: Disease education, Hygiene behavior Typhoid fever, Typhoid prevention

Introduction

Typhoid disease is acute infectious disease caused by the bacterium salmonella enteric serovar Typhi. Globally, typhoid fever is an important cause of morbidity and mortality in many regions of the world with an estimated 12-33 million cases leading to 2,16,000 – 6,00,000 deaths annually. Typhoid fever poses a public health concern in less developed countries, particularly in Africa such as Nigeria especially in Oyo State. According to WHO (2018), typhoid fever is usually transmitted from the contaminated food or water and the disease occurs in the areas where there are limited sanitation and lack of clean drinking water. The environmental transmission of the disease occurs due to exposure of fecal materials of infected people as a result of transportation by both humans and flies (Akullian, 2015; Dewan, 2013; Enabuele and Awunor (2016) and Polonsky, (2014) pronounced the growing trends of typhoid fever problem particularly in developing countries as an epidemic. Globally, the increase in the disease is attributed to poor sanitation infrastructure or condition, level of education, personal or individual hygiene, and poor lifestyle or behavior (Dewan, 2013; and Jung-Seok, (2016) attributed the rapid rise of typhoid fever in those countries to urban slum and informal squatter settlements.

Typhoid fever is among the major widespread diseases affecting both young children and young adults in Nigeria. Morbidity associated with illness due to Salmonella continues to be on the increase, in some cases resulting in death. Lack of coordinated epidemiological surveillance systems has undermined reported cases of waterborne infections, particularly typhoid fever. Typhoid fever is difficult to evaluate in Nigeria because of the lack of a proper coordinated epidemiological surveillance system. However, information on typhoid fever prevalence has been documented by several researchers in some states in Nigeria ranging from 0.071% in Oyo to 47.1% in Osun. (Akinyemi, Smith, Oyefolu and Coker, 2005).

Mothers are the key caregivers for children under five years old. They are the one who can decide about the prevention of water borne diseases in children. There is a need to undertake a study to assess the knowledge and practices of mothers of under five children on prevention of selected diseases such as typhoid fever. According to journals for medical science and clinical research (2017) it was reported that from the total population of mothers of children below 5years covered in the study, 2% mother had adequate knowledge, 52% had moderately adequate knowledge and 46% had inadequate knowledge

Attitude of nursing mothers in the prevention of typhoid fever must be positive in order for them to make sure that they protect their children. Attitude is learnt through experience, exposure and observation which may lead to behavior. Journals for medical science and clinical research (2017) reported that 50% of mothers had positive attitude, 50% had negative attitude regarding prevention of water borne diseases. The findings suggest that a high frequency of mothers had poor attitude regarding prevention of water borne diseases such as typhoid. Disease education aims to promote those practices that will help to prevent water and sanitation-related diseases. It also examines the social context of hygiene practices. The idea is that when people understand and think together about their situations and practices, they can plan and act to prevent diseases (Water Aid Uganda, 2003).

In a study by Abdinia, . (2014) result showed that the 28.8% of the mothers had a good knowledge while the 46.5% had medium and 24.7% suffered low knowledge and practice score was 51.98%, 30.03% and 17.99% of the mothers was poor, medium and good, respectively in water borne disease and its treatment. Jimam, Galam, Dangiwa and Dauda, (2015) reported that health education influence the good knowledge of nursing mothers on causes of fever and positively impacts their attitude on prevention of fever. In a study conducted by Yeleins. and Altin. (2001) it was

revealed that the maternal knowledge score was poor and practice score was good toward the water borne disease and its preventive measures however maternal knowledge and practices with regards to these were inadequate and in some areas grossly deficient.

There are estimated 21.5 million infections and 200,000 deaths from typhoid fever globally each year which is as a result of inadequate knowledge and attitude towards typhoid prevention. Mayron (2011) nursing mothers are the direct player here, it is envisaged that if they can be well educated on how to raise children from contacting diseases like typhoid during childcare and parenting much problem of childhood mortality will be solved. (WHO 2018). Sima 2020 reported that mothers of under- five age children needed health education regarding typhoid fever as they were not much aware about its causes, symptoms, treatment and prevention. Jegede (2018) found out that Childhood morbidity declined significantly in the group that received preventive health education intervention relatively to the control group, he therefore recommended that caregivers' attitude on medication compliance and healthcare seeking practices can be improved significantly by the introduction of preventive health education to Parents and Teachers Association (PTA) meetings. Okore., Ubiaru,, and Nwaogwugwu, (2015) stated that there is need for massive health education campaign to educate the residents of Obuda-Aba to correct the wrong perception they have about malaria and typhoid fever for effective treatment and control of the diseases.

According to Ogundele (2004) disease education aims to promote those practices that will help to prevent water and sanitation-related diseases. It also examines the social context of hygiene practices. The idea is that when people understand and think together about their situations and practices, they can plan and act to prevent diseases. The rate at which children get sick and most times die as a result of gastro-enteritis has become public health concern. Each time the mother fails to maintain hygienic practice while taking care of

such child, it predisposes the child to Gastro Intestinal Tracts (GIT) such as typhoid, cholera and so on. Farouk sand Mervat . (2021), in a study conducted on effect of Educational Program on Improving Mothers' Performance towards Children with Typhoid Fever at Zagazig City Samia, concluded that the study results provided evidence that after implementation of the educational intervention mothers' knowledge, attitudes, and practices regarding typhoid fever improved with highly statistically significant differences. Recommendations: Periodical educational programs for mothers regarding typhoid fever about preventive measures and its management with illustrated media Raluca. et al (2018) conducted a study on Implementation of Interventions for the Control of Typhoid Fever in Low- and Middle-Income Countries reported that the findings provide a snapshot of typhoid-relevant interventions implemented over 25 years and highlight factors associated with implementation success from the perspective of a sample of key informants as well as improve the knowledge and attitude of nursing mothers towards typhoid prevention Balwani, Wai, and Letcher. (2019) concluded that there was a significant effect of reception of education about diarrheal disease (including typhoid) prevention on the handwashing knowledge, as well as significant effect of hygiene facilities and handwashing knowledge on handwashing practice were supported. Future studies should obtain more relevant information of target population and collect data pre and post intervention.

Previous research has focused on typhoid fever surveillance with little attention to implementation methods or effectiveness of control interventions. Studies have also been conducted on the knowledge and risk perception of the community towards typhoid fever which was reported in according to health institution in 2016 that typhoid fever is on top of ten morbidity causes registered in Nigeria, but little has been done on educating the nursing mother on knowledge and attitude towards typhoid prevention. It is on this premise that the

researchers study the knowledge and attitude of nursing mothers towards typhoid prevention.

Objective of the Study

The main objective of this study was to determine the effects of disease education on knowledge and attitude towards typhoid prevention among nursing mothers in Akinyele Local Government area of Oyo state.

The following null hypotheses were tested in this study:

1. There will be no significant main effect of treatment on Knowledge of nursing mothers towards typhoid prevention in Akinyele Local Government area of Oyo state.

2. There will be no significant main effect of treatment Attitude of nursing mothers towards typhoid prevention in Akinyele Local Government area of Oyo state.

3. There will be no significant main effect of educational qualification on: Knowledge and Attitudes of nursing mothers towards typhoid prevention in Akinyele Local Government area of Oyo state.

Methods

The research design that was adopted for this study was pretest-protest control group, quasi-experimental research design using 2x2 factorial matrix. equal in number and they were assigned to treatment and control group. The study used factorial matrix design based on the fact that the study involved the use of independent variables at two levels; treatment and control. Moderating variable of educational background at two levels (none formal education and formal education) The design also gave room for proper comparison between the experimental group and the control group to determine the impact of the intervention on the performance of the experimental group. The study used factorial matrix design based on the fact that the study involved the use of independent variables at two levels; treatment and control. And Educational level at two levels The research design was schematically represented as:

O₁ X₁ O₃ Experimental group (Disease education) O₂ X₂ O₄.....Control group (Nutrition , education)

Where O₁ and O₂ are pretest observation for the experimental group and control group respectively.

O₃ and O₄ are posttest observation for the experimental group and control group respectively.

X₁.....treatment programme

X₂.....placebo for group

The population for this study comprises of all nursing mothers undergoing immunization in primary health care of Akinyele Local Government Area of Oyo state.

The sample for this study consist of two hundred (200) nursing mothers in Akinyele Local Government Area. selected using multistage sample procedure Stage one: Simple random sampling techniques was used to select four (4) primary health care centre out of twenty two (22) primary health care center, Stage two: purposive sampling techniques was used to select 50 participants duly registered and attend post -natal clinics from each of the four selected health care center making a total of 200 participants while in Stage three: Simple random sample was used to randomized two each of the four health center selected to Experimental with venue at Moniya Primary health centers and control groups with Ojoo Orogun Primary health centers making a total of 100 participants in each group respectively, The experimental group was exposed to disease education on typhoid prevention while the control group was given family planning education for a period of six weeks at one hour period per week with the help of four trained research assistants.

The research instrument used for the study was a disease education training package for the experimental group and Nutritional Education package for the control group. A self developed questionnaire: divided into two-sub-scales which are knowledge of typhoid fever prevention scale (KEDS) and attitude towards typhoid prevention Scale (AEDS) to elicit information on the variables of the study with a reliability coefficient of 0.72 and

Ethical Consideration

Approval for this study was sought from the office of the general co-ordinator primary health care head office at Akinyele Local Government Moniya in order to carry out the research in the selected primary health care for the study. All participants were assured of confidentiality and anonymity. They were adequately informed of all procedure and purpose for the study, The participants signed and informed consent form stating the purpose of the study.

Results

Ho1. There will be no significant main effect of treatment on knowledge of nursing mothers towards typhoid prevention in Akinyele Local Government area of Oyo state.

Table 1 showed that there is significant main effect of treatment on knowledge of nursing mothers towards typhoid prevention in Akinyele Local Government, Oyo State ($F_{(1/170)} = 12.82, p < .05, \eta^2 = 0.07$). The Null Hypothesis is rejected. The use of Experimental group and control group have great influence on the prevention of typhoid by nursing mother in Akinyele Local Government, Oyo State. The estimated marginal mean of knowledge towards typhoid prevention in Post-Test the participants in experimental group had the highest mean value of 24.82 while the control group had the lowest level with mean value of 22.29. This indicate that the experimental strategies used for the treatment group had positive effect on the knowledge towards typhoid prevention .

Ho2. There will be no significant main effect of treatment Attitude of nursing mothers towards typhoid prevention in Akinyele Local Government area of Oyo state.

Table 2 showed that there is significant main effect of treatment on disease education on attitude of nursing mothers towards typhoid prevention in Akinyele Local Government, Oyo State ($F_{(1/170)} = 271.99, p < .05, \eta^2 = 0.62$). The Null Hypothesis is rejected. The use of Experimental group and

control group had influence on the prevention of typhoid by nursing mother in Akinyele Local Government, Oyo State. The estimated marginal mean of attitude towards typhoid prevention in Post-test, the participants in experimental group had the highest mean value of 27.75 while the control group had the lowest level with mean value of 25.18. This indicate that the experimental strategies used for the treatment group have effect on the attitude towards typhoid prevention .

Ho3: There will be no significant main effect of treatment on Knowledge of nursing mothers prevention in Akinyele Local Government area of Oyo state.

Knowledge and attitude

Table 3 showed that there is no significant main effect of educational qualification on disease education on knowledge and attitude of nursing mothers towards typhoid prevention in Akinyele Local Government, Oyo State ($F_{(3/170)} = 0.88, p > .05, \eta^2 = 0.02$). State ($F_{(3/170)} = 1.35, p > .05$). State ($F_{(3/170)} = 1.35, p > .05$) respectively The Null Hypotheses is accepted. The use of educational qualification does not have any influence on the prevention of typhoid by nursing mother in Akinyele Local Government, Oyo State. The estimated marginal mean of knowledge towards typhoid prevention in Post-Test by Age is presented in table 4.13. The slight increase in the mean of tertiary (24.79) above the mean value of various educational levels (No formal education (24.69), primary (24.64) and Secondary (24.74)) had an effect on the knowledge of typhoid fever by nursing mothers while the estimated marginal mean of attitude towards typhoid prevention in Post-Test by age is presented in table 4.14. The slight increase in the mean of Secondary (26.62) above the mean value of various educational levels (No formal education (26.15), Primary (26.29) and Tertiary (26.54)) had effect on the attitude of nursing mothers in Akinyele Local Government of Oyo State.

Table 1. Ancova on Effect of treatment on knowledge of nursing mothers on typhoid

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	7.565 ^a	29	.261	1.626	.031	.217
Intercept	664.385	1	664.385	4141.297	.000	.961
Treatment	2.057	1	2.057	12.824	.000	.070
Knowledge	.091	1	.091	.567	.453	.003
Total	122517.640	200				
Corrected Total	34.838	199				

a. R Squared = .217 (adjusted R Squared = .084)

Table 2. Ancova on Effect of treatment on attitude of nursing mothers on typhoid

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	283.177 ^a	29	9.765	22.665	.000	.795
Intercept	981.501	1	981.501	2278.171	.000	.931
Treatment	117.182	1	117.182	271.992	.000	.615
Education	1.739	3	.580	1.346	.261	.023
Attitude	.049	1	.049	.114	.737	.001
Error	73.241	170	.431			
Total	141225.430	200				
Corrected Total	356.418	199				

a. R Squared = .795 (Adjusted R Squared = .759)

Table 3. Ancova Estimated Marginal Means of Post test on Effect of education on attitude of nursing mothers on typhoid

Education	Knowledge		Attitude	
	Mean	Std Error	Mean	Std Error
Nonformal	24.691	.171	26.154	.279
Primary	24.638	.082	26.267	.135
Secondary	24.739	.067	26.622	.110
Tertiary	24.789	.054	26.521	.090

Discussion

The findings of this study revealed that there is significant main effect of treatment on knowledge of nursing mothers towards typhoid prevention in Akinyele Local Government, Oyo State ($F_{(1/170)} = 12.82, p < .05, \eta^2 = 0.07$). The Null Hypothesis is rejected. This implied that the disease education that was used as treatment for the experimental group was significantly effective on the knowledge of nursing mothers towards typhoid prevention. The exposure of the treatment group to disease education brought about difference in the knowledge of typhoid prevention between the two

groups. The study corroborated the findings of Farouk sand Mervat . (2021), who reported that the study results provided evidence that after implementation of the educational intervention mothers' knowledge, attitudes, and practices regarding typhoid fever improved with highly statistically significant differences. therefore Recommended that Periodical educational programs for mothers regarding typhoid fever about preventive measures and its management with illustrated media. The findings was also in line with that of Jegede (2018) who found out that childhood morbidity declined significantly in the

group that received preventive health education intervention relatively to the control group, he therefore recommended that caregivers' attitude on medication compliance and healthcare seeking practices can be improved significantly by the introduction of preventive health education to Parents and Teachers Association (PTA) meetings. Reluca et al (2018) in their study on Implementation of Interventions for the Control of Typhoid Fever in Low- and Middle-Income Countries reported that the findings provide a snapshot of typhoid-relevant interventions implemented over 25 years and highlight factors associated with implementation success from the perspective of a sample of key informants as well as improve the knowledge and attitude of nursing mothers towards typhoid prevention

The result also showed that there is significant main effect of treatment of disease education on attitude of nursing mothers towards typhoid prevention in Akinyele Local Government, Oyo State ($F_{(1/170)} = 271.99, p < .05, \eta^2 = 0.62$). The Null Hypothesis is rejected. The use of Experimental group and control group had influence on the prevention of typhoid by nursing mother in Akinyele Local Government, Oyo State. The finding is in line with Balwani, Wai, and Letcher. (2019) which concluded that there was a significant effect of reception of education about diarrheal disease (including typhoid) prevention on the handwashing knowledge, as well as significant effect of hygiene facilities and handwashing knowledge on handwashing practice were supported. Future studies should obtain more relevant information of target population and collect data pre and post intervention. It also supported the findings of Farouk sand Mervat . (2021), who reported that the study results provided evidence that after implementation of the educational intervention mothers' knowledge, attitudes, and practices regarding typhoid fever improved with highly statistically significant differences. therefore recommended that Periodical educational programs for mothers regarding typhoid fever about preventive measures and its

management with illustrated media. The findings was also in line with that of Jegede (2018) who found out that childhood morbidity declined significantly in the group that received preventive health education intervention relatively to the control group, he therefore recommended that caregivers' attitude on medication compliance and healthcare seeking practices can be improved significantly by the introduction of preventive health education to Parents and Teachers Association (PTA) meetings

However the result also showed that there is no significant main effect of educational qualification on disease education on knowledge and attitude of nursing mothers towards typhoid prevention in Akinyele Local Government, Oyo State ($F_{(3/170)} = 0.88, p > .05, \eta^2 = 0.02$). State ($F_{(3/170)} = 1.35, p > .05$). State ($F_{(3/170)} = 1.35, p > .05$) respectively The Null Hypotheses is accepted. The use of educational qualification does not have any influence on the prevention of typhoid by nursing mother in Akinyele Local Government, Oyo State. The estimated marginal mean of knowledge towards typhoid prevention . The findings is in contrast with with the finding by Bara (2016) research which revealed that education has its own contribution for risk perception of typhoid fever disease. In general according to the study the risk perception level of the community is poor. Since knowledge and risk perception are the key factor for the control and prevention of typhoid fever, strengthen the awareness of the community towards typhoid fever is mandatory. It is also in contrast with to the findings by Mirriam (2005) who observed that those with low level of education suffered more from typhoid episodes in their lifetime than those with higher level of education.

The limitations encountered in this study was that some of the participants were not willing to divulge important information about their personal lives by responding sincerely to the questionnaire items. Participants were assured of the confidentiality of responses in order to allay their fears by the researcher. The researchers motivated

the participants by given them some refreshment during the intervention program.

Conclusion

Based on the findings of this study, it was concluded that disease education has positive influence and effective in improving the knowledge and attitude of nursing mothers towards typhoid prevention in Akinyele Local Government Area of Oyo State. While educational qualification has no significant main effect on disease education on knowledge and attitude of nursing mothers towards typhoid prevention.

Acknowledgement

We sincerely thank the Chief Public Health Officer of the Ministry of Health and Sanitation in Akinyele local Government, who accepted and gave us moral support, the Matrons of the Primary health care centers in Moniya and Ojoo/Orogun who guided us through the mapping of the study area, .We also appreciate the nursing mothers for their active participation and steadfast response during the study.

Conflict of interest

The authors hereby declared that there is no competing interests'

Authors' Contributions

Conceptualization, S.A.F. and S.D.O;
Methodology, F.M.O; Formal Analysis, S.A.F and F.M.O and S.D.O.

References

Alba, S., Bakker, M. I., Hatta, M., Scheelbeek, P. F D., Dwiyant, R., and Usman, R. (2016). Risk factors of typhoid infection in the Indonesian Archipelago. *Plos One journal*, 11,(6), 203 -217
Akinyemi, K.O., Smith, S.I., Oyefolu, A.O., and Coker A.O. (2005). Multidrug resistance in Salmonella enteric serovar Typhi isolated from patients with typhoid fever complications in Lagos Nigeria., *Public Health Journal of health, population and nutrition*. 25, (3), 351-358
Akullian, A., Ng'eno, E., Matheson, A., Cosmas, L., Macharia, D., and Fields, B. (2015).

Environmental transmission of typhoid fever in an Urban Slum. *Plos Neglected Tropical Journal* 9, (12), 1-14.

Asmaa M. Mohamed, Ahmed M. El-Hany, Safaa, A. M., and Asmaa K. H, (2020). Assessment of Knowledge and Attitude For patients and their Care Givers Regarding to Typhoid Disease in Outpatient Clinics in Fever Hospitals at Assiut Governorate. *Assiut Scientific Nursing Journal*, 8, (1), 156-166.

Balwani, C. M., Wai, H., and Letcher, M. M., (2019) Associations Between Health

Education, Hygiene Facilities, Handwashing Knowledge and Practice Related to Diarrheal Disease Prevention among Schoolchildren after Typhoid Outbreak in Rumphi District, Malawi: A Cross Sectional Survey. *Biomedical Journal of Scientific and Technical Research*. 16, (5),1-10

Center For Disease Control and Prevention (CDC) (2018). Typhoid fever information for health professionals archived from the original ;05-25

Crump, J.A., Luby, S.P. and Mintz, E. D., (2004). The global burden of typhoid fever.

World Health Organization 82,346-53

Dewan, A. M., Corner, R., Hashizume, M., and Ongee, E. T. (2013). Typhoid fever and its association with environmental factors in the Dhaka Metropolitan Area of Bangladesh: a spatial and time-series approach. *Plos Neglected Tropical Typhoid Diseases*, 7,(1), 1-14.

Farouk, M. and Mervat, E. I. (2021). Effect of Educational Program on Improving Mothers' Performance towards Children with Typhoid Fever at Zagazig City Samia International Journal of Novel Research in Healthcare and Nursing 8, (2),151-168 ‘

Enabuele, O. & Awnor, S. N. (2016). Typhoid fever in tertiary hospital in Nigeria: Another look at the widal agglutination test as a preferred option for diagnosis. *Nigerian Medical Journal*, 57, 145-149.

Jegede, K.B., (2018) Evaluation of the impact of a school based health education program on caregivers' knowledge, attitude and practices of

- malaria, diarrhea and pneumonia in Ibadan North Local Government Area of Oyo state, Nigeria. Unpublished Thesis, University of Tampere School of Health Sciences.
- Jung-Seok, L., Mogasale, V. V., and Kangsung., L. (2016). Geographical distribution of typhoid risk factors in low and middle income countries. *BMC Infectious Diseases*, 16,1-10.
- Miriam, S. (2005). *Family Health Guide*. A Darling Kindersley Ltd, London, United Kingdom.
- Nahimana, MR, Ngoc, C.T., Olu, O., Nyamusore, J., Isiaka, A. and Ndahindwa V, (2017). Knowledge, attitude and practice of hygiene and sanitation in a Burundian refugee camp: Implications for control of a Salmonella typhi outbreak. *Pan African Med Journal*. 28, (1), 123-134
- Nguri, K., (2011). Risk factors influencing typhoid fever occurrence among the adults in maina slum, nyahururu municipality, kenya. Unpublished Master of public health thesis. School of Health Sciences of Kenyatta University.
- Ogundele, B.O. (2004). *Problems in Health Education*. University of Ibadan, Ibadan. Published by Codat publication, UI P.O. BOX 2400. ISBN: 978-196-094-9.
- Okore, O.O., Ubiaru, P.C., and Nwaogwugwu, U.G. (2015)..Prevalence of Malaria and Typhoid fever co-infection: Knowledge, Attitude and Management practices among residents of Obuda-aba, Abia state, Nigeria. *American Journal of Public Health Research*. 3,(4), 162-166.
- Puchalski, R.L.M., Van-Lettow, M, Makwakwa, A., Chan, .A K., Hamid, J.S., Kawonga, H., Martiniuk, A.L, Schull, M.J., Van Schoor, V., Zwarenstein, M., Barnsley, J. and Straus., S.E (2016). The impact of a knowledge translation intervention employing educational outreach and a point-of-care reminder tool vs standard lay health worker training on tuberculosis treatment completion rates: study protocol for a cluster randomized controlled trial. *Trials Journal*.,17,(1), 439.
- Raluca, B., Daina, A., Amruta, R., Michelle, F. G., Zulfiqar, A. B and Melanie, B. (2018) Implementation of Interventions for the Control of Typhoid Fever in Low- and Middle-Income Countries *Am J Trop Med Hygiene*. 99, (3),79–88.
- Sima, D., (2020). Knowledge Regarding Typhoid Fever among Mothers of Under 5 Children in Selected Community of Bhaktapur, *International Journal of Innovative Science and Research Technology*, 5,(1), 505-522.
- Wain, J., Hendriksen, R.S., Mikoleit, M.L., Keddy, K. H., Ochiai,,R. L. (2015). Typhoid fever. *Lancet* (London, England), 38,(9973),1136-1145.
- Water Aid Uganda, (2003).A report on school sanitation and hygiene education workshop.
- World Health Organization, (WHO) 2008. Typhoid vaccines: WHO position paper. *Wkly Epidemiol Rec*. 83,(6),49-59.