

## **PERCEPTION OF WATER PURIFICATION AS A CONTROL MEASURE OF GUINEA WORM DISEASE AMONG RURAL WOMEN OF OHAOZARA COMMUNITY**

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### **ABSTRACT**

*This study was aimed at ascertaining level of perception of water purification processes as a control measure of Guinea Worm diseases among rural women in Ohaozara Community of Ebonyi State. In line with the objectives of the study, four research questions and three corresponding hypotheses were formulated. By purpose based classification scheme, descriptive survey research design was used. The sample for the study consisted of 300 child bearing age women from randomly drawn villages in Ohaozara. The instrument used for collecting data was self-developed, structured, valid and reliable questionnaire, which was administered on face-to-face basis to the respondents. Data collected from the respondents were tallied and analyzed using descriptive statistic of percentage and inferential statistic of chi-square. Based on the findings, it was concluded that the level of perception of water purification as a control measure of guinea worm disease among rural women in Ohaozara community was low. Age, level of education, and religious affiliations were found to be significant factors that influenced the women's perception. Women aged 39-48 years disclosed much more high level of perception than other age brackets. Recommendations were made based on the findings, pertinent among which is that Nigerian Guinea Worm Education Programme (NGWEP) should intensify her Guinea Worm education services at the Guinea worm endemic zones to educate villagers on water purification processes.*

Health is the fitness of the body with regard to physical, social, psychological and mental wellness (Onuzulike, 1998). World Health Organization (2000) defined health as a state of completed physical, mental, social, emotional, spiritual and occupational wellbeing, and not merely the absence of disease, or infirmity. They further stated that health may be categorized into high, low, moderate and minor levels.

High level of health should be acknowledged as Okafor (1992) opined that possession of high level of health will make life more useful and meaningful. Health promotion could be seen as putting into practice those things, beliefs, attitude, practice, aspirations that will gear toward the attainment of good health (Uzo, 1999) According to WHO (2000) Health promotion is the process of enabling people increase control over their health and to improve their health status. World Health Organization further suggested that for equity in health the following strategies of health promotion should be observed;

1. Specific protection
2. Early diagnosis
3. Eating a well balanced, low fat diet
4. Drinking wholesome water
5. Regular medical care and
6. Maintaining personal hygiene.

Disease is defined by the World Health Organization (2000) as a phase of life that depicts failure or disturbance in the growth, development, functions and adjustments of the organism as a whole or any of its system. Disease could be communicable and non-communicable disease (Ewuzie, 1998). She described communicable disease as an illness due to a specific infectious agent or its toxic

products, which arises through the transmission of that agent or its products from a reservoir to a susceptible host, either directly as from an infected person or animal or indirectly, through an intermediate plant or animal host, vector or the inanimate environment. Infectious agents of disease in man are Bacteria, Spirochetes, Rickettsia, Viruses, Fungi, Protozoa and Metazoa, she added.

Ewuzie classified communicable diseases in terms of their means of spread as follows:

1. Air-borne disease
2. Insect-borne disease
3. Food-borne disease
4. Water-borne disease
5. Broken skin and contact disease

Thousands of people globally continue to die as a result of water borne diseases, (Adesioye, 1995). According to him, this can occur as a result of one drinking contaminated and unwholesome water which contains millions of organisms that are detrimental to human health, where water is consumed without purification the outcome of disease such as diarrhoea, typhoid and Guinea worm infection which bring with the attendant misery and social economic implications, they noted.

Schultz (1983) opined that the rural communities in the developing countries of the world suffer from Guinea worm disease as a result of their low level of knowledge of health promotion principles which is a pre-requisites for good health, protection against disease and guide for provision of portable drinking water.

Nwosu (1989) explained that the debilitating scourge called guinea worm "know no age barriers and as such it can attack babies and adults where the scourge is extremely rampant. Consequently, it is not only a menace to men and women, but also a threat to life. He added that the disease attack the limb, mostly the legs, the breast, scrotum and other private parts and even the tongue of the victim.

In other hand, Udemba (1996) pointed out that it is common to find guinea worm in areas with poor drinking water. According to him, the streams often degenerate into stagnant ponds which its infection is highest among adults who are predominantly farmers and children of school age who often act as helpers in the farms. Ponde (1996) opined that thousands of peoples globally continue to die as a result of water borne disease, due to ignorance and lack of knowledge

of water purification. Onuzulike (2002) explained that people with tertiary level of Education are more health informed/ educated than those with no formal and primary level of education.

Adesioye (1995) and Aborisode (1997) opined that many communities are so ingrained in traditional beliefs that the disease they suffer such as the guinea worm infections are not regarded as water-borne but as punishment from the gods. They also added that such erroneous beliefs obviously influence the life of many people in the endemic areas thereby increasing the number of affected victims.

Guinea-worm as a water borne disease enters the human body through drinking and bathing water that contain some visible shrine-like crustacean (water fleas or cyclop) infected with Guinea worm larva, (WHO 2000).

According to WHO (2000) the larva enter the intestine, penetrate the walls and migrate to the abdominal muscles, continue to grow and mature into worms, hence they move to position under the skin of an infected persons limbs. It takes approximately one year for the guinea worm to emerge an enril larvae, they concluded.

Akamo (1997) opined that Guinea worm has different signs and symptoms as headache, bodyache and fever, itching, stomach upset, vomiting, loss of appetite, appearance of blisters and ulceration as the mature worm emerge.

Benson (1985) states that the transmission and clinical manifestation of dracunculiasis are highly seasonal owing to its life cycle and long incubation period; hence transmission occurs only under certain climatic conditions and varies according to the local rainfall pattern. According to Benson, the transmission is limited to few months during the rainy seasons when surface source of drinking water becomes available and are used, so with consequent infections it becomes clinically apparent during the same period a year later. He further observed that, in some areas, where rainfall is much more substantial and prolonged, Guinea worm disease is most evident and is transmitted during the dry season when surface water sources are much more scarce and contain higher concentration of Cyclops.

Okorie, Ajayi and Kazeen (1989), outlined that the consequences of guinea worm infection are numerous ranging from Economic, social, physical, mental,

psychological and cultural negative effects. They stated that 'apart from the uncountable health problems, the plague inflicts on its victims, the disease also cause great economic problems to the society in general, Guinea worm plague retards emergence from the body, the victims undergo severe pains and discomfort, and because the parasite comes out only a few inches per day, the victim suffers a psychological distress that makes him forget other economic or social obligations he or she owes the society". More important is the fact that the plague is capable of demobilizing the victim for months, if not permanently. Thus it throws the victim into an eternity of social and economic instability and chaos, they noted.

According to the World Health Organization (2000) Guinea worm disease can be controlled by:

1. Avoidance of drinking unboiled and unfiltered water especially in areas where sources of drinking water are wells, ponds, lakes or other stagnant water.
2. Treatment of Cyclops infested water with a mixture of perchloro (31) with copper sulphate ( $\text{Cu}_2\text{SO}_4$ )<sup>2</sup> to each 100,000 gallons of water.

3. Treatment of water with part lime per thousand part water
4. Predation ie. introduction of Cyclops eating fish such as barbus puckelli into Cyclops infested water.
5. Protection of wells to avoid contact of the leg of infected persons when drawing water.
6. Provision of pipe borne water to guinea-worm infected communities.

Water purification is one of the major control measures for guinea worm - diseases, (Adesioye, 1995). According to him, water is essential to life, and the essence of this life giving substance in the environment is evident during drought and famine while its surplus as can be seen in heavy rainfalls and floods can be catastrophic. In the same vein, where water is consumed without purification, the outcome can be grave.

Adesioye, suggested that, purification of water can be achieved by combination of some of the following measures:

1. Protection of the sources
2. Storage
3. Coagulations and sedimentation
4. Filtration
5. Disinfection and
6. Boiling

To heighten the problems of water borne disease vis-a-vis the endermicity of guinea worm in some communities is the high level of ignorance of the masses on water purification processes, (Jackson, 1995). He opined that the increasing deterioration arising from poor home and environmental management is a confronting problem in developing countries of the world.

In Nigeria, it is estimated that 200 children and 900 adults are infected with guinea worm and 450 too have died of guinea worm infestation (Akamo, 1993). According to Akamo, the determinant factors in evolving solution to these health problems include degree of awareness of water purification processes, the knowledge and beliefs the communities have concerning the causation as well as beliefs and attitudes displayed towards control of the disease. It is against the background of healthy living that the researcher was motivated towards, ascertaining the perception of water purification as a control measure of Guinea worm disease among rural women of Ohaozara community. The following research questions and hypotheses guided the study.

1. What is the level of perception of rural women in Ohaozara on water purification processes as

- a control measure of Guinea worm disease?
2. What is the level of perception of rural women in Ohaozara on water purification processes as a control measure of Guinea worm disease based on their ages?
  3. What is the level of perception of rural women in Ohaozara on water purification processes as a control measure of Guinea worm disease based on their levels of education?
  4. What is the level of perception of rural women in Ohaozara on water purification processes as a control measure of Guinea worm disease based on their religious affiliation?

#### **Hypotheses**

1. There is no significant difference on the level of perception of rural women in Ohaozara on water purification processes as a control measure of Guinea worm disease based on their ages.
2. There is no significant difference on the level of perception of rural women in Ohaozara on water purification processes as a control measure of Guinea worm

disease based on their level of education.

3. There is no significant difference on the level of perception of rural women in Ohaozara on water purification processes as a control measure of Guinea worm disease based on their religious affiliation.

#### **Methods**

The research design was a descriptive survey research design which give the exact picture of the current status of the subject, (Ejifugha, 1998, Olaitan and Nwoke, 1989, Nwanna, 1982). The population for the study consisted of 2000 women in ten (10) randomly drawn Villages in Ohaozara in Ebonyi state. A multi staged sampling procedure was used to draw a sample of 300 women in Ohaozara community. The sample was done in three stages. Stage one consisted of clustering of the subjects into ten representing the ten villages in Ohaozara-Ebonyi state. Balloting with replacement was used in drawing the five villages. In stage two, all the kindred in each of the five drawn villages were listed out, proportionate sampling techniques was used in choosing three kindred from each of the five villages. In stage three, the non-probability

(chance selection) was used in choosing 20 women from each of the 15 kindreds. The instrument for data collection was structured questionnaire. It had two sections. Section A was concerned with the bio-data of respondents, while section B contained six close ended questions based on the objectives of the study. The instrument was validated by three experts from department of Public Health and Microbiology of Madonna University, Elele Campus. The modification of the instrument was based on the judgment of the experts. The test

retest technique was used in establishing (0.8) reliability of the instrument using ten women from Okigwe in Imo State to test the reliability of the instrument. The validated instrument was administered by the researcher on face to face basis with the help of the executive members of the women wing of Ohaozara development Union as research assistants. The generated data were presented in percentages and chi-square statistics was used to test the null hypothesis.

### Results

Table 1: Level of perception of the respondents on water purification as a control measure of Guinea worm disease.

N = 287

Water purification processes	High F %	Moderate F %	Low F %
Protection of the source	96 (17%)	85 (19%)	106 (15%)
Storage	86 (15%)	75 (17%)	126 (18%)
Coagulation and sedimentations	90 (16%)	65 (15%)	131 (19%)
Filtrations	95 (17%)	80 (18%)	112 (16%)
Disinfection	91 (16%)	55 (12%)	141 (20%)
Boiling	112 (20%)	95 (21.2%)	80 (11%)
<b>Total</b>	<b>570</b>	<b>445</b>	<b>696</b>

Table 1 shows generally low level of perception of water purification as a control measure of Guinea worm disease among women in Ohaozara-Community.

The highest level of perception of 112 (20%) was on boiling water, followed by protection of the sources 96 (17%). On filtering the water 95 (17%) subjects had high level of perception, 80 (18%) has moderate level of perception while 112 (20%) had low level of perception. Disinfection pulled 91 (16%) high level of perception 55 (12%) moderate level of perception, and 141 (20%) low level of perception. Coagulation and sedimentation recorded 90 (16%) high level of perception, 65 (15%) moderate level of perception and 131 (19%) low level of perception.

Table 2: Respondent perception of water purification as a control measure of Guinea worm disease based on their ages.

Ages	High	Moderate	Low	Total
Less than 19yrs	8 (12%)	12 (13%)	40 (31%)	60 (21%)
19-28yrs	22 (3.1%)	26 (29%)	18 (14%)	66 (23.0%)
29-38yrs	23 (33.3%)	28 (31%)	20 (16%)	71 (25%)
39-48yrs	16 (23.1%)	24 (27%)	50 (39%)	90 (31%)
<b>Total</b>	<b>69</b>	<b>90</b>	<b>128</b>	<b>287</b>

$X^2_{cal} = 37.3, x^2_{0.05} = 12.592, df = 6 p < 0.5$

Table 2 reveals that there was significant difference among respondents from various levels of age in their perception of water purification as a control measure of Guinea worm diseases ( $P < 0.5$ ). The highest level of perception came from respondents whose age range was 29-38yrs, while the lowest level of perception came from respondents subjects whose ages were less than 19yrs .

Table 3: Respondents perception of water purification as a control measure of guinea worm disease based on their level of education.



Level of education	High	Moderate	Low	Total
No formal Edu.	5 (8%)	10 (13%)	45 (31%)	60 (21 %)
Primary Edu.	19 (29%)	30 (40%)	54 (37%)	103 (36%)
Secondary Edu.	24 (36%)	20 (27%)	30 (21%)	74 (26%)
Tertiary Edu.	18 (27%)	15 (20%)	17 (12%)	50 (17%)
<b>Total</b>	<b>66</b>	<b>75</b>	<b>146</b>	<b>287</b>

$\chi^2 \text{ cal} = 26.4, \chi^2_{0.05} = 12.592, \text{df} = 6 \text{ p } 1.0$

Table 3 reveals that there was significant difference among respondents from various levels of education and their perception of water purification process as a control measure of Guinea worm diseases ( $P < 0.05$ ). The highest level of perception came from respondents with secondary education, while the least level of perception came from respondents with no formal education.

Table 4: Respondents perception of water purification as a control measure of guinea worm disease based on their religious affiliations.

Religious Affiliations	High	Moderate	Low	Total
Catholic	20 (22.2%)	20 (23%)	20 (18.1%)	60 (21%)
Anglican	11 (12.2%)	15 (17.2%)	14 (13%)	40 (14%)
Pagan	10 (11.1%)	30 (34.4%)	50 (45.4%)	90 (31.4%)
Pentecostal	49 (54.4%)	22 (2.2%)	26 (24%)	97 (33.8%)
<b>Total</b>	<b>90</b>	<b>87</b>	<b>110</b>	<b>287</b>

$\chi^2 = 36.5, \chi^2_{0.05} = 12.592, \text{df} = 6, \text{p} < 0.05.$

Table 4 reveals that there was significant difference among various Religious Affiliations of the respondents of the study and their perception of water purification processes as a control measure of Guinea worm diseases ( $P < 0.05$ ). The highest level of perception came from respondents of Pentecostal. While the least level of perception came from respondents of pagan.

## **Discussion**

The result of the study revealed that the level of perception of water purification processes as a control measure of Guinea worm disease among rural women in Ohaozara in Ebonyi state was low. The result is supported by the work of Schultz (1983) who confirmed that people living in the rural communities in the developing countries of the world, have low level of knowledge of health promotion principles which is a prerequisite for good health and a means of protecting the individual against disease and provision of portable drinking water. On the contrary, Igwe and Emeharole (1993) and Akamo (1993) opined that without safe portable drinking water, most people became vulnerable to infections where hygiene practices and health awareness are drastically low among the rural dwellers.

Research question 2 sought to ascertain the level of perception of water purification as a control measure of Guinea worm disease among rural women in Ohaozara based on their ages. The study revealed that 29-38 years of the respondents have the highest level of perception with 16 (5.6%) while those with age less than 19 years indicated the least level of

perception. Nwosu (1989) confirmed that guinea worm knows no age barriers, and as such it can attack babies and adults where the scourge is extremely rampant.

Research questions 3 sought to determine the level of perception of water purification as a control measure of Guinea worm disease among rural women in Ohaozara based on their level of education. The respondents with secondary education pulled 24 (8.4%) high level of perception to concept as against respondents with no formal education that showed 5 (1.7%) low level of perception. The literature reviewed confirmed that education help in improving knowledge of health concepts (Ponde, 1996).

Research question 4 showed that pagans have 10 (3.5%) low level of perception as against Catholics, Anglicans, and Pentecostals that revealed high level of perception. Literature reviewed confirmed that many communities are so ingrained in traditional beliefs that disease they suffer such as the guinea worm infections are not regarded as water borne disease but are seen as punishment from the gods for their sins (Adesioye 1995 & Aborisode 1989).

## Conclusion

Based on the findings, the following conclusions were drawn.

1. Respondents revealed low level of perceptions of water purification as a control measure of Guinea worm.
2. Level of perception of water purification as a control measure of guinea worm disease was based on age, level of education, occupation and religious affiliation of the respondents.
3. Respondents for age bracket less than 19yrs revealed the lowest level of perception while those from 29-38 ages cohort revealed high level of perception.
5. Pagan respondents revealed low level of perception while Pentecostals revealed highest level of perception..

Respondents with secondary education indicated highest level perception while respondents from non formal education disclosed lowest level of perception.

## Recommendations

Based on the findings drawn from the data collected and conclusion, the researcher made the following recommendations.

1. Periodic health education strategy, should be used in

enhancing awareness and mobilizing the endemic communities towards drinking only wholesome, safe boiled and filtered water.

2. The Nigerian Guinea worm eradication programme (NGWEP) should intensify her education to Guinea worm endemic zones so as to ensure that the villagers are adequately educated on the processes of purification of water before drinking.
3. Religious leaders should be mobilized and educated by health personnels on strategies towards educating members of their congregation on water purification processes.
4. Health educators should target pagans, farmers and traders as intervention strategies are planned and implemented towards increasing awareness on water purification processes.
5. Government and the Non-Governmental Organization (NGO's like UNICEF) should sponsor In-house seminar, conferences and workshop on water purification processes at the grass-root.

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