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Layman's View of the Impact of COVID-19 Lockdown on the Incidence of Malaria and Intestinal Helminth Infections and Anxiety, Port Harcourt, Nigeria

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Abstract

The COVID-19 pandemic led to lockdown in several countries which resulted into economic challenges. This article investigated the impact of the lockdown on the health of residents of Port Harcourt, Nigeria, with emphasis on malaria and intestinal helminth infections and anxiety. This research was questionnaire based. Consent of respondents was sought before the questionnaires were administered. Descriptive statistics was used for data analyses. A total of 200 questionnaires were distributed out of which 187 were returned. Respondents were comprised of 71 males and 102 females. Out of the 187 returned questionnaires, 148 (79.1%) reported to have suffered ill-health during the lockdown. Results showed that 28% of the respondents suffered malaria only, 25% malaria and anxiety, 20% malaria and intestinal helminths, 18% malaria, intestinal helminths and anxiety, while 3% suffered only intestinal helminth infections, 3% only anxiety, and 3% intestinal helminth and anxiety, respectively. Student t-tests showed that the number that reported sick were significantly higher than those that reported to have been healthy throughout the lockdown (p=0.03). It was concluded that the lockdown significantly affected the health of respondents. It is therefore recommended that other strategies that would reduce the transmission of COVID-19 while enabling economic activities without adversely affecting the health of the populace should be advanced.

Keywords: ***COVID-19; Lockdown; Malaria; Intestinal helminth infection; Anxiety disorder.***

1. Introduction

The COVID-19 pandemic led to several deaths causing countries around the world to impose restrictions on movement, along with other precautionary measures [1]. The lockdown had economic consequences as countries reported huge

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losses and increased inflation rates [2]. It also resulted into health challenges among individuals- healthy persons and those with predisposed health conditions alike [3].

Parasitic infections, including malaria and intestinal helminths among a host of others, are generally more prevalent in poor, developing countries. This is primarily due to inefficient waste disposal systems, unkempt environments especially in rural villages, poor nutrition, inadequate medical facilities, and poverty which hinders infected persons from seeking available medical care [4].

Malaria is transmitted by female anopheles mosquitoes whose larval stages develop in stagnant water [5]. Anopheles mosquitoes are endophylic and are usually found indoors where they await a blood meal [6]. As such, the lockdown would naturally favour the spread of malaria, especially among populations who do not embrace any protective insecticidal measure.

Intestinal helminths, or helminth parasites, are mostly soil-transmitted and because they usually do not result in death [7], are often over-looked by the populace except in severe cases. Inappropriate disposal of faecal matter is significant in the transmission of these parasites [7]. In developing countries, it is common to find residential areas lacking in sanitary facilities (including toilets). Residents of such places only find adequate faecal waste disposal facilities at work or worship places or by visiting friends and relations. Total or partial restriction of movement during the lockdown is therefore expected to lead to a significant increase in indiscriminate disposal of faeces. This in turn, would increase the prevalence of intestinal helminth infections.

Restriction in movement as well as loss of businesses and down-turn of economic activities are factors that can lead to anxiety among a healthy population [3, 8]. Fear of contracting the disease and shortage of food and water supplies and the inflation of prices of goods and services during the lockdown could increase the feeling of anxiety and depression. This would be worsened by the fact that most of the working population are skilled workers and small business owners who needed to go out daily to carry out economic activities in order to meet financial obligations.

This research examined the layman's view of the impact of the COVID-19 lockdown on his health with regards to malaria and intestinal helminth infections, and anxiety.

2. Materials and Methods

Questionnaires were used to obtain data in this research. The questionnaires were structured in such a way as to enhance speed of completion. The consent of the participants were sought before they were given copies of the questionnaire to fill out.

2.1 Structure of the questionnaire

The first part of the questionnaire comprised of questions that provided information on the respondent's bio-data including age group and gender. This was followed by a section on the occupation of the respondents. Information of the type of accommodation (residence) and income level of the participants were also requested. Lastly, questions on

the health conditions of the respondents and the impact of the lockdown on their health were asked. There were few sections where the respondent was required to express himself in writing, but most of the questions were structured as objective questions.

2.2 Distribution of the questionnaires

A total of 200 questionnaires were distributed to adult respondents irrespective of gender. Their consent were sought and those who were willing were issued with a copy of the questionnaire. Some respondents filled out the questionnaires immediately while others took it away and returned it on a later date. Some others asked to be helped with their responses. In this case, the questions were read out to them and their answers were recorded.

2.3 Statistical analysis

Descriptive statistics were used to analyze and interpret the results. Percentages were computed and a pie chart was plotted to illustrate the results. Prevalence of infection was computed as percentage of infected respondents. These analyses were done using Microsoft Excel. Student t-test was used to test the significance of the result.

3. Results

3.1 Demographics of respondents

A total of 200 questionnaires were distributed but 187 were returned. The respondents were comprised of 71 males and 102 females; 14 did not indicate their gender. Of the 187 returned forms, it was found that 149 were self-employed adults who were mostly artisans; 17 worked for government establishments, while 21 worked for private organizations including banks, clinics and private schools (Table 1).

By age group, a higher percentage of persons within the age group of 21-25 years responded to the questionnaires. This was followed by 26-30years age bracket. Two respondents did not declare their age group (Table 2).

Table 1: Distribution of Respondents by Gender and Occupation.

Gender	**Male**	**Female**	**Not Indicated**
	71	102	14
Occupation	Self-Employed	Government Establishments	Private Establishments
	149	17	21

Table 2: Health Status of the Respondents in Relation to Age.

Age Group (Years)	Total Respondents	Number Reported Sick	Number Reported Healthy
21-25	67 (36.2%)	47 (25.4%)	20 (10.8%)
26-30	42 (22.7%)	36 (19.5%)	06 (3.2%)
31-35	25 (13.5%)	22 (12.0%)	03 (1.6%)
36-40	17 (9.2%)	14 (7.60%)	03 (1.6%)
41-45	09 (4.9%)	05 (2.7%)	04 (4.9%)
46-50	09 (4.9%)	08 (4.3%)	01 (0.5%)
51-60	09 (4.9%)	07 (3.8%)	02 (1.1%)
61-65	04 (4.9%)	04 (4.9%)	00 (00)
66-70	03 (1.6%)	03 (1.6%)	00 (00)
Total	185	146 (78.9%)	39 (21.1%)

3.2 Response of respondents in respect to infection with common parasitic diseases- malaria and intestinal helminths- and anxiety

Out of the 187 respondents who returned their forms, thirty-nine (20.9%) (18 males and 21 females) reported to have been free from malaria and intestinal helminths and anxiety disorders throughout the period of lockdown (Table 2). Out of this number, 26 (66.7%) did not suffer any ill health throughout the period while 13 (33.3%) reported ill with diseases such as typhoid, ulcer, arthritis, pneumonia, diarrhea, internal heat, high blood pressure, sore throat and cholera.

One hundred and forty-eight (79.1%) (53 males, 81 females, and 14 no gender-indicated) respondents reported to have suffered from one or a combination of malaria, intestinal helminth infections and anxiety during the period. Forty-two (28.4%) respondents suffered only malaria, 4 (2.7%) only intestinal helminth infections and 4 (2.7%) only anxiety. Thirty respondents (20.3%) reported to have suffered from both malaria and intestinal helminth co-infections, 5 (3.4%) reported both intestinal helminths and anxiety, 37 (25%) reported both malaria and anxiety, while 26 (17.6%) reported to have been affected by all three (malaria, intestinal helminths and anxiety) (Fig. 1).

Student t-tests showed that the number of respondents that reported sick with the disease conditions under consideration was significantly higher than those that reported to have been healthy ($t_{10} = 1.81$, $p=0.03$).

Furthermore, ninety-one respondents (61.5%) out of the 148 respondents who reported sick, noted that they were sick more often during the lockdown than during normal living conditions. These were comprised of 56 females and 35 males. They gave the following as reasons for their health challenges: restriction of movement causing them to stay indoors most of the time, lack of access to potable drinking water also due to the lockdown, consumption of low quality food, lack of exercise, and low sales/profits during the period. On the other hand, thirty-five (22 females and 13 males) of the 148 respondents, reported that their health challenges did not differ appreciably during the lockdown. Others did not state if their health condition was worse during the lockdown or not. Among the infections investigated, malaria was of the highest prevalence (28%).

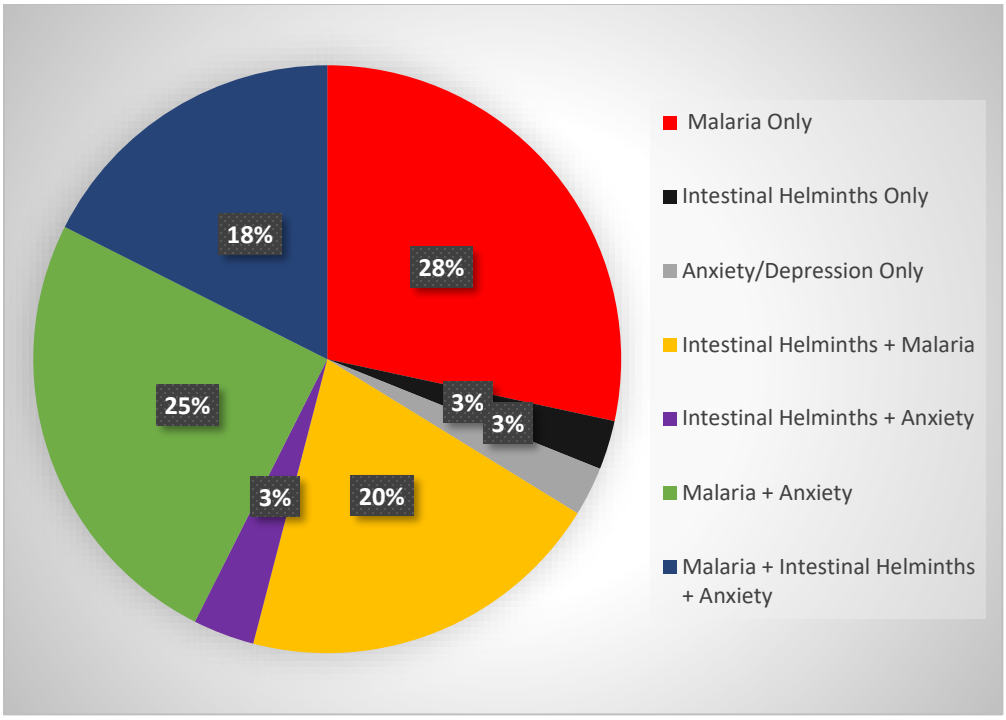

Fig. 1. Prevalence of investigated infections in respondents.

4. Discussion

The lockdown was reported to have led to a decline in the transmission and fatality of COVID-19 [1]. It however, adversely affected other health conditions. Results from this survey showed that a higher percentage of the respondents suffered from varying ailments during the lockdown. Among the infections investigated, malaria was of the highest prevalence (28%). This was expected because malaria is endemic in the southern part of Nigeria where the survey was conducted [9]. This observation is also attributed to the lockdown causing people to be indoors most of the time, thereby creating more windows for bite by the female anopheles mosquitoes which are endophilic [6]. Scarcity of funds and the inflation of prices of foodstuff threatened the survival of most respondents forcing them to concentrate expenses on provision of food instead of other needs including the purchase of insecticides.

About 20% and 25% of the respondents who reported ill suffered a combination of malaria and intestinal helminth infections, and malaria and anxiety, respectively. Another 18% suffered all three conditions during the period. Intestinal helminth infections are also endemic in the country. Some researchers [10], [11] have reported on co-infection of malaria and intestinal or geohelminth infection in Nigeria. However, there is a general complacent attitude of the majority of the population to diagnosing and treating intestinal helminth infections [12]. The prevalence of infection with these parasites is often reported in community testing or scientific research [12], [13]. We therefore, consider the prevalence reported in the present research to be significant and attribute it to indiscriminate disposal of faecal waste due to the lockdown which prevented the respondents from accessing adequate disposal facilities.

Anxiety was generally expected to be high among the respondents. The nature of COVID-19 was still under investigation by scientists, the rate of transmission and fatality was reportedly high and studies on the treatment and vaccination

were still on-going. These coupled with the imposed lockdown and loss of jobs and businesses would naturally lead to increased anxiety among the population [3], [8].

Though 20.9% of the respondents reported to have been free from malaria, intestinal helminth infections, and anxiety, some of them suffered other diseases, such as typhoid, ulcer, arthritis, pneumonia, diarrhea, internal heat, high blood pressure, sore throat and cholera. Ninety-one persons (61.5%) of the 148 who reported sick with the ailments under investigation noted that they were ill more frequently during the lockdown than during normal periods. They thought the reasons for their poor health condition was due to restriction of movement causing them to stay indoors most of the time, lack of access to potable drinking water during the lockdown, consumption of low quality food, lack of exercise, and financial pressures during the period. This is in consonance with researchers who reported adverse effects of lockdown on human health [14], [15].

5. Conclusion and Recommendation

This survey on the layman's view of the impact of the lockdown due to COVID-19 on the prevalence of malaria, intestinal helminth infections and anxiety revealed that most of the respondents suffered the ailments under investigation, and that they suffered these ailments more frequently during the lockdown than during normal periods. The lockdown was implicated to be responsible since it hindered movement, exercise and business activities. It also prevented access to portable water and good food supplies.

In consideration of the results obtained from this survey, it is eminent that the lockdown may have been a necessity and may have actually helped to reduce the incidence of the COVID-19 pandemic. However, its impact on other health conditions indicates that it is important to advance other strategies that would reduce the transmission of COVID-19 while enabling economic activities without adversely affecting the health of the populace.

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