

Social distancing as a public health intervention against COVID-19 pandemic: Effect of social determinants of health prevailing in Nigeria

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Abstract:

Background: The strategy of physical/ social distancing is innovated to stem any ongoing pandemic. In the era of COVID-19, when over 100 million of people are infected with greater than 2 million deaths worldwide, this strategy was adopted. This cross sectional (online) google survey, was conducted to explore how the social determinants of health could affect the implementation of social distancing in Nigerian settings.

Materials and Methods: Seven hundred and seventy-two (772) participants (374 males, 398 females), most of whom were married (489), whose occupations were under “professional/management/technical” (435), and with tertiary education (639), were enrolled and completed the semi-structured questionnaire bordering on socio-demographics, knowledge of COVID-19, social distancing and health determinants.

Results. The majority of respondents (93.3%) agreed social distancing as an important tool in stemming the pandemic while some (57%) are aware that between 1-2 meters is acceptable distance that should be observed from another person. The logistic regression models showed that “knowledge of social distance”, “workplace condition and those respondents who sometimes attend “parties” were likely to always observing social distancing.

Conclusion: In conclusion, most of the respondents were able to maintain social distancing at social gatherings and work places and this may be due to the policy statement of the government on social distancing during the pandemic, while the participants with poor knowledge of social distancing and work place condition and seldom attend parties are less likely to always observe social distancing.

Key Word: Social distancing; Covid-19; SARS-CoV-2; Social determinant; Nigeria; Pandemic

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I. Introduction

The current pandemic of the Corona Virus Disease 2019 (COVID-19) caused by a novel Severe Acute Respiratory Syndrome Corona Virus-2 (SARS-CoV-2) was first reported in the city of Wuhan, Hubei, China, in early December, 2019 [1,2,3]. Globally as at 31st of March 2020, a total of 750,890 cases and 36,405 deaths had been confirmed (WHO). Africa with the various health and socio-economic challenges has also reported approximately 5,287 cases and 172 deaths (Case Fatality ratio (CFR) 3%) as at 31st March in across 48 African countries, [4]. Nigeria with a population of 200million has also reported a total number of 135 confirmed cases and 2 deaths. [5]

In response to this global crisis the World Health Organization (WHO) advised on measures which some countries have adopted to control and prevent the continuous spread of this virus. The strategies adopted includes; use of facemask, promotion of the hand washing culture, closure of international (land and air) borders, closure of schools, worship places, work and public places. In addition, as a public health intervention, WHO also advised that countries should adopt social distancing measure. Hence, globally most countries with or without cases of COVID-19 have adopted this strategy of social distancing.

Social distancing is a strategy to limit physical contact within people with a view to slowing down transmission of an ongoing infection or pandemic. At the individual level, social distancing involves the use of non-contact greetings, maintaining at least one metre distance between yourself and other people, and staying

home when ill. At the community level, social distancing involves closure of any events or settings in which people gather together, including schools, workplaces, places of worship, cultural, social and sports events. For COVID-19, social distancing is necessary at both the individual and community levels, because transmission occurs frequently from person-to-person and infection causing severe illness in up to 20 percent of people affected. The social distancing measure is of significance to protecting the population, maintaining health and limiting disease spread considering the fact that no population immunity (herd immunity) exists yet despite the global incidence of COVID-19. Reducing contact between people reduces the cumulative number of opportunities for transmission and thus remains the only way to help protect people who are at high risk for contracting COVID-19 disease.

Towards the end of March 2020, Nigeria came up with its guideline on social distancing through the Nigeria Centre for Disease control (NCDC). The social distancing measures as described by NCDC involves strict adherence to; Non-physical greetings (avoiding hand shaking or hugs), maintaining at least 2 metres (6 feet) physical distance between yourself and others and; closure of activities that will cause any form of gathering (including schools, places of worship, sporting and social events). [6]

Nigeria being a developing country, with its associated social and health challenges is assumed will have a herculean task to ensure the effective implementation of the social distancing strategy among other COVID-19 mitigating measures. The WHO's Commission on the Social Determinants of Health (SDH) defined SDH as "the conditions in which people are born, grow, live, work and age" and "the fundamental drivers of these conditions." The term "social determinants" often evokes factors such as health-related features of neighborhoods (e.g., walkability, recreational areas, and accessibility of healthful foods), which can influence health-related behaviors, [7,8]. However, evidence has accumulated, pointing to socioeconomic factors such as income, wealth, and education as the fundamental causes of a wide range of health outcomes. This study aims to explore how the social determinants of health could affect the implementation of the social distancing strategies in Nigeria.

II. Material and Methods

The study design was an online cross-sectional survey using "google form". This became necessary due to the movement restriction imposed by the authorities during the study period. Google form is an easy-to-use platform (either on an android phone or computer) within Google Drive for creating online survey forms which supports basic data validation, basic skip logic, and a range of question types.

Study Design: Cross-Sectional Study

Study Location: This was an online cross-sectional survey using "google form". This became necessary due to the movement restriction imposed by the authorities during the study period.

Study Duration: 6th to 27th April, 2020

Sample size: 772

Sample size calculation: Raosoft online sample size calculator (<http://www.raosoft.com/samplesize.html>) [9] was used to calculate the sample size. Assuming that $\geq 20,000$ population of Nigeria, 50% expected prevalence, 5% margin of error at 95% confidence interval, the required sample size calculated was 377. Adding a non-response rate of 40% the total sample size determined was 529. However, at the end of the study, which was extended by one week, a total of 772 participants were enrolled.

Subjects & selection method: The general public were the target study population, anonymous individuals aged 18 years and above. This was done by convenience sampling based on the network and social platforms of the investigators. The survey link was sent to different platforms, academic, social and other networking platforms at random. The survey was conducted over a three-week period 6th April to 27th April, 2020. During this period there were posting and reposting of the link by the investigators on their different social media platforms. Once the respondents get the link, they were expected to click on it and follow the prompt and instructions. Information was provided on the objectives of the study, the fact that it was voluntary and the need to provide informed consent before they proceed. A total of 46 questions were asked which took an average of 5-10 minutes to complete. On completion of the questionnaire, there was a appreciation prompt at the bottom which reads "thank you" with the submit button close to, and this ends the process of completing the study tool.

Procedure methodology

A semi- structured set of questions on the socio-demographics, knowledge of COVID-19 and third social distancing and the health determinants was created in google form for the survey to be filled by the respondent. The study tool was piloted to ascertain for appropriateness of questions if it would address the set objectives. Changes were made to the tool after the pilot and these responses were not included in the final data sets. The questions were structured in four sections to solicit information on the following: the socio-demographics, knowledge of social distancing, the different social health determinants and knowledge of

COVID-19. The overall objective was generation of evidence-based data that would inform policy on feasibility of social distancing as a strategy in controlling the spread of SARS-CoV-2.

Definition of variables

Outcome variable: The outcome variable was observing social distancing either “always” or “sometimes”

Knowledge of Social Distancing: This was ranked based on being able to define social distancing correctly, number of metres for the defined distance.

Knowledge of COVID-19: Being able to list correcting the transmission route and prevention of COVID-19, the responses were ranked.

Living Condition: Ranking availability of social amenities (water and electricity), Population size in each household Vs space available.

Parties, burials and religious gathering- number of times attending such events

Transportation to workplace or daily means of livelihood by private or public vehicles

Workplace condition: Combining and ranking, Office work space, and office environment

Perception of participants: If participants think that social distancing is an important tool in curbing the spread of COVID19. Expressed as “poor” if it’s not an important tool and “good” if it’s an important tool.

Ethical Issues

The proposal was reviewed, and ethical approval given by the Institutional Review Board of the Nigerian Institute of Medical Research. Information about the study was provided, the summary of the questions, the fact that it was voluntary and the time it would take the respondent to complete the survey was provided and respondents were encouraged to go through this before taking the survey. The informed consent of the participants was obtained by a click before the survey starts which was a compulsory field. Confidentiality of the participant’s data was kept throughout the study.

Statistical analysis

Data were collected and exported to SPSS version 23 for further analysis. Counts and percentages were used to describe the categorical data. Categorical data were presented as cross tabulations and statistical test was done using Chi square at 95% confidence interval and $p < 0.05$. Logistic regression was applied to determine the social health determinants affecting the implementation of the social distancing strategy. Important variables such as the knowledge of COVID-19 pandemic, perception of curbing the pandemic, living condition, workplace conditions, attendance and gathering in public places and means of transportation to work and daily means of livelihood were included in the multivariable logistic regression model. Age and gender were used as adjustments.

III. Result

Description of the participants

A total of 772 participants completed the survey, 51.6% were females, 63.3% were married and average age was 40 years ($SD \pm 11.4$). More than 50% of the participants were professional or managers and more than 60% earned above the minimum wage of N30,000. A significant proportion of the respondents 98% had completed tertiary level of education. (Table 1)

Knowledge of COVID-19 and Social distancing

More than 80% of the participants had heard about social distancing and about 71% of them alluded to the fact that they always observe social distancing. Majority of the participants (93.3%) agreed that social distancing is an important tool in curbing spread of COVID19 but about 57% of the participants indicated correctly that 1-2 metres is the defined social distance. Only 374(48.4) of the respondents had good knowledge of COVID-19.

Unadjusted odds ratio

For the social demographic characteristics, initial crude unadjusted odds ratio showed that two of the six explanatory variables sex and educational level were statistically significant with odds ratio and confidence interval (CI) of [1.58(1.15-2.18)] and [2.15(1.29-3.58)] respectively. These shows that females are 1.58 times more likely to always observe social distancing compared with males. Also, the age-group ≥ 35 years are more likely to always observe social distancing compared to the < 35 years of age (Table 2).

Five of the eight explanatory variables of the social determinants of health were statistically significant with p -values < 0.05 . These includes: knowledge of social distancing 0.49(0.33-0.72)

Attendance at parties [2.06(1.4-3.03), burials [2.00(1.4-2.83)] and religious gatherings [1.83(1.25-2.69)] (Table 3).

Effects of the social determinants of health prevailing in Nigeria that predicts observing social distancing- Adjusted odds ratio.

The five variables education, knowledge of social distancing, knowledge of COVID-19, attendance at social events (burials, parties and religious gathering) that were significant at $P \leq 0.1$ in table 2 were included in the model and adjusting for sex and age as a continuous variable. However, only three of the variables showed strong association with always observing social distancing during the pandemic.

Knowledge of social distancing

The first model considered the knowledge of social distancing strategy as the predictor for the effect of social distancing measure with adjustment for the effects of gender and age of the participants and those with poor knowledge of social distancing in the reference category. The odds ratio and 95% Confidence interval (CI) was [2.01 (1.28-3.16)] which was statistically significant with ($p=0.002$) shows that respondents with good knowledge of social distancing are two times more likely to observe social distancing compared with those that had poor knowledge.

Work place condition

Workplace condition looking at both the number of coworkers and space available to work was also a predictor for always observing social distancing with adjustment for the effects of gender and age. This was statistically significant ($p=0.029$) with odds ratio and CI of [1.56(1.04-2.34)]. The odds of always observing social distancing was 1.56 times higher at workplace for respondents with good workplace condition compared with those that had poor work place conditions.

Events-Parties

Parties was the only statistically significant variable from the three social events, $p=0.031$ with odds ratio and CI of [0.45(0.221-0.931)].

Transportation to workplace or daily means of livelihood

Commuting to work place or daily means of livelihood was statistically significant with $p=0.029$ with odds ratio and CI of [1.56(1.04-2.34)] with adjustment for the effects of gender and age of the respondents. Respondents that commute by private means of transportation are 1.56 folds likely to always observe social distancing compared to those that make use of public vehicles.

Table 1. Socio-Demographics Characteristics of the Respondents N= 772

| Item | Variable | Frequency n (%) |
|-----------------------|-----------------------------------|-----------------|
| Sex | Male | 374(48.8) |
| | Female | 398(51.6) |
| Marital status | Single | 214(27.7) |
| | Married | 489(63.3) |
| | Separated | 19(2.5) |
| | Widowed | 29(3.8) |
| | Divorced | 7(0.9) |
| Age | Mean (SD) | 39.9(11.4) |
| Age Group | ≤20years | 20(2.6) |
| | 21-30years | 161(20.9) |
| | 31-40years | 233(30.2) |
| | 41-50years | 221(28.6) |
| | 51-60years | 89(11.5) |
| | ≥61years | 34(4.4) |
| Occupation | Professional/Managerial/Technical | 435(56.3) |

| | | |
|-------------------------------|--------------------|-----------|
| | Skilled manual | 79(10.2) |
| | Unskilled manual | 17(2.2) |
| | Sales and services | 130(16.8) |
| | Clerical | 12(1.6) |
| | Agriculture | 5(0.6) |
| | Unemployed/Student | 79(10.2) |
| Average monthly income | | |
| | ≤N10,000 | 74(9.6) |
| | N10,001-N20,000 | 63(8.2) |
| | N20,001-N30,000 | 40(5.2) |
| | N30,001-N50,000 | 78(10.1) |
| | N50,001-N100,000 | 147(19.0) |
| | N100,001-N200,000 | 121(15.7) |
| | ≥ N200,001 | 207(26.8) |
| Level of Education | | |
| | Tertiary | 639(97.6) |
| | Secondary | 91(11.8) |
| | Informal | 5(0.6) |
| | Primary | 25(3.2) |

Table 2: Bivariate analysis of sociodemographic characteristics of respondents as associated with observing social distancing

| Variables | | | p value | uOR(95%CI) |
|-------------------------------|--|---|---------|-----------------|
| | Always observe social distancing n (%) | Sometimes observe social distancing n (%) | | |
| Gender | | | | |
| Male | 247(67.3) | 120(32.7) | 0.005 | 1.58(1.15-2.18) |
| Female* | 300(76.5) | 92(23.5) | | |
| Marital Status | | | | |
| Not married | 184(68.9) | 83(31.1) | 0.205 | 0.80(0.58-1.12) |
| Married* | 351(73.3) | 128(26.7) | | |
| Age group | | | | |
| Less than 35 years | 175(70.6) | 73(29.4) | 0.532 | 0.89(0.64-1.26) |
| 35 and above years* | 363(72.7) | 136(27.3) | | |
| Educational Level | | | | |
| Secondary or less | 99(83.2) | 442(69.7) | 0.003 | 2.15(1.29-3.58) |
| Tertiary * | 20(16.8) | 192(30.3) | | |
| Occupation | | | | |
| Not working | 484(72.7) | 182(27.3) | 0.202 | 1.38(0.84-2.26) |
| Working * | 52(65.8) | 27(34.2) | | |
| Average monthly income | | | | |
| <\$100 | 128(73.1) | 42(26.9) | 0.501 | 1.14(0.78-1.67) |
| ≥\$100* | 387(70.5) | 162(29.5) | | |

uOR: unadjusted odds ratio, CI: confidence interval, ref: reference

Table 2: Bivariate analysis of social determinants of health associated with observing social distancing

| Variables | | | p value | uOR(95%CI) |
|---------------------------------------|--|---|---------|-----------------|
| | Always observe social distancing n (%) | Sometimes observe social distancing n (%) | | |
| Knowledge of social distancing | | | | |
| Poor | | | 0.000 | 0.49(0.33-0.72) |
| Good* | 288(74.8) | 97(25.2) | | |
| Knowledge of COVID-19 | | | | |
| Poor | 259(69.3) | 115(30.7) | 0.089 | 1.31(0.95-1.81) |
| Good* | 288(74.8) | 97(25.2) | | |
| Living Condition | | | | |
| Poor | 259(69.3) | 115(30.7) | 0.347 | 0.84(0.59-1.2) |
| Good* | 144(69.6) | 63(30.4) | | |

| | | | | |
|--------------------------------------|-----------|-----------|-------|-----------------|
| Events | 403(73.0) | 149(27.0) | | |
| Parties- Always* | | | | |
| Sometimes | 188(81.0) | 44(19.0) | 0.000 | 2.06(1.4-3.03) |
| Burials – Always* | 304(67.4) | 147(32.6) | | |
| Sometimes | 383(76.4) | 119(23.7) | 0.000 | 2.00(1.4-2.83) |
| Religious gathering- Always* | 130(61.6) | 81(38.4) | | |
| Sometimes | 176(79.6) | 45(20.4) | 0.002 | 1.83(1.25-2.69) |
| Workplace condition | 300(68.0) | 141(32.0) | | |
| Poor | | | | |
| Good* | 109(62.3) | 66(37.7) | 0.001 | 0.52(0.36-0.76) |
| Daily means of transportation | 391(75.8) | 125(24.2) | | |
| Public | | | | |
| Private* | 253(75.1) | 84(24.9) | 0.119 | 1.30(0.93-1.83) |
| | 237(69.7) | 103(30.3) | | |

uOR: unadjusted odds ratio, CI: confidence interval, * reference

Table 3: Multiple logistic regression analysis of predictor factors of observing social distancing during the period of COVID -19 movement restriction in Nigerian.

| Independent variables | P-Value | aOR(95% CI) |
|--------------------------------|---------|-----------------|
| Knowledge of social distancing | 0.002 | 2.01(1.28-3.16) |
| Workplace condition | 0.029 | 1.56(1.04-2.34) |
| Events (Parties) | 0.031 | 0.45(0.22-0.93) |

aOR adjusted odds ratio, CI: confidence interval

IV. Discussion

This study aims to look at one of the prevention strategies, Social distancing as a public health intervention against COVID-19 pandemic considering the effect of social determinants of health prevailing in Nigeria. Only two of the social determinants of health (seldom attending social gatherings particularly parties and poor work place conditions) were associated with always observing social distancing and also the knowledge of social distancing after adjusting for age and sex.

Majority of respondents 93.3% agreed social distancing as an important tool in stemming the COVID-19 pandemic, with 71% observing social distancing. This finding is similar to the study [10] where the vast majority of respondents in the study reported practicing a high level of physical distancing. The knowledge of social distancing was a significant predictor of social distancing measure to curtail the spread of SARS-Cov-2. This might be due to the fact that participants with adequate knowledge and practice of social distancing take other non-pharmaceutical measures as important and required to curtail the spread of the virus. The good living condition was not significant as a predictor for measuring the effect of social distancing to curtail the spread of SARS-Cov-2. This might be by virtue of many participants living in a commodious apartment had few members of the household.

The odds of observing a social distancing was 1.56 times higher at workplace in terms of the space available and number of coworkers. This may be the result of government strategy of decongesting the office through a lockdown measure to reduce the spread of the pandemic. During this period, only top officials and workers on essential services were allowed to work.

Attending parties ($p < 0.05$) was a significant factor for predicting the effects of observing social distance strategy while religious and burial gathering were not significant. This fact may be attributed to the restriction imposed by the government on the number of people that can gather for a party during the pandemic.

Limitation

Majority of the respondents had tertiary level of education which in a way restricted the responses to the educated group.

V. Conclusion

In conclusion, most of the respondents were able to maintain social distancing at social gatherings and work places and this may be due to the policy statement of the government on social distancing during the pandemic. In addition, good knowledge of social distancing also predicted always observing social distancing. This may be attributed with the wide awareness created by the government during the pandemic and thus should be maintained.

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