Abstract

Background: In resource-scarce settings like Nigeria, access to conventional drugs and antiretroviral therapy (ART) is highly limited, hence the resort to use of traditional herbal medicine by a significant number of people living with human immunodeficiency virus and acquired immunodeficiency syndrome (HIV/AIDS) (PLWHAs). Traditional medicine (TM) continues to provide health coverage for most of the people in developing countries, and it is equally becoming increasingly popular in western countries. Aim: This study aims to present the status and use of TM and determine the factors associated with its use among patients with HIV/AIDS on highly active ART in a tertiary health institution in Sokoto, Northwest Nigeria. Methodology: This was a descriptive, cross-sectional study involving HIV/AIDS patients attending antiretroviral treatment center of the Usmanu Danfodiyo University Teaching Hospital (UDUTH), Sokoto, Nigeria. The study population comprised PLWHAs attending the ART clinic of the hospital (UDUTH). A total of 271 respondents were recruited into the study and administered a set of pretested structured questionnaire. Ethical approval for this study was obtained from the ethical committee of the teaching hospital. Results: Only 11 (4.2%) of the respondents had used TM before, of whom 9 (5%) were females and 2 (2.7%) were males with $P = 0.399$. Only one of the respondents had side effects following the use of TM, and the most common reason for the use of TM was as a result of too much weight loss. Conclusion: Although the use of TM among the study participants in Sokoto was low, there is need to educate PLWHAs about the possible risks of interactions following the concurrent use of TM and ART.

Keywords: Human immunodeficiency virus/acquired immunodeficiency syndrome, people living with human immunodeficiency virus and acquired immunodeficiency syndrome, Sokoto, traditional medicine

INTRODUCTION

However, the number of newly infected persons is on the decline in most parts of the world.[1] There were 2.1 million (1.9–2.4 million) new HIV infections in 2013, indicating a 38% decline compared to 2001 figure. The rate of decline is not uniform within and between countries, with lower rates of decline recorded in Sub-Saharan African countries.[1] The disease is currently one of the most challenging socioeconomic problems facing Nigeria as it affects mostly the young and most economically productive population. For instance, in Nigeria, in 2013 alone, 220,394 and 210,031 newly infected persons and AIDS-related deaths, respectively, were recorded.[2] This may partly explain the fact that over 3.2 million people live with HIV and an estimated 1.5 million (45%) in Nigeria require antiretroviral therapy (ART).[3] However, it is pertinent to note that the number of deaths with AIDS decreased tremendously in recent times in Nigeria which is in part due to the success of highly active antiretroviral therapy.
treatment (HAART) in improving the general health and life span of those infected with HIV.[2] In resource-scarce settings like ours, access to conventional drugs and ART is highly limited, hence the resort to use of traditional herbal medicine by a significant number of people living with HIV and AIDS (PLWHAs). Traditional medicine (TM) continues to provide health coverage for most of the people in developing countries and it is equally becoming increasingly popular in western countries.[3-5] TM is a term used to refer both to TM systems such as traditional Chinese medicine, Indian Ayurveda, and Arabic Unani medicine and to various forms of African indigenous medicine. TM therapies include medication therapies – if they involve use of herbal medicines, animal parts, and/or minerals – and nonmedication therapies – if they are carried out primarily without the use of medication, as in the case of acupuncture, manual therapies, and spiritual therapies. In countries where the dominant health care system is based on allopathic medicine or where TM has not been incorporated into the national health care system, TM is often termed “complementary,” “alternative,” or “nonconventional” medicine.[6]

In many African countries including Nigeria, traditional healers play a crucial role by providing primary health care including taking care of people living with emerging diseases such as HIV/AIDS.[7,8] Medicinal plants or herbal remedies have been used to improve the quality of life and increase life expectancy of patients with chronic diseases, including those infected with the HIV.[9-13]

Due to unpredictable scarcity of drugs, many PLWHAs opt for traditional health services for the control of the disease. A study in Kano, Northwest Nigeria, showed a prevalence of between 4.25% and 27.5% of HIV patients using traditional medication at different stages of their treatment.[14] However, considering the large variety of medicines used in the ART, such combination would increase the possibility for occurrence of drug–medicinal plant interactions that could promote reduction of the therapeutic effects and/or increase the antiretroviral toxicity, as well as reduction on therapeutic effects and/or increase on the medicinal plants or herbal medicine toxicity. There is, therefore, the need to generate evidence on the magnitude, pattern, and factors that influence the use of TM among PLWHAs in other parts of Nigeria to guide health planners and health communication experts on how to address the issue.

The theoretical basis of this study was in line with the Andersen health behavior model which provides a framework to analyze the determinants of utilization of health services.[15] The model was first developed in 1968 and has undergone several revisions that are currently made up of three sets of individual- and community-level factors that provide constructs to assess individuals’ capacity to access and use health services. The three main set of factors or characteristic of the model are (a) predisposing characteristics, (b) enabling characteristics, and (c) need characteristics. The predisposing factors are assumed to explain the observed differences in the health services utilization behavior, and they are basically the bio-sociodemographic variables. At the community level, the predisposing factors that could influence the use of health services include the demographic profile of the community, collective and organizational values, and cultural beliefs including religion and political viewpoints. The enabling factors include health care financing mechanisms and the number of health resources present in a given location constitutes the resources available at individual and community levels that are required to access and afford the cost implication of services rendered in health facilities. At the individual level, it is the level of income and family wealth and type of health insurance coverage at his/her disposal that will be used to defray the fee for service charges and incidental cost such as transport fare.[16] The community-level factors include geographical accessibility of health services in terms of the number of health facilities and skilled health workers. It includes distance, referral network, the type of services rendered, cost of goods and services, how health workers are compensated, and the prevailing policy drives. The need factors are further divided into two, namely perceived needs for health care intervention and evaluated needs.[16] The former is based on personal self-assessment of individual’s state of health and previous experiences on symptoms and signs of departures from health or health-related events and their psychological state in relation to the health-related event. It ultimately forms how they perceive their health and where to seek for intervention.

Although there are a good number of reports on traditional uses of plants to treat various diseases, knowledge on herbal remedies used to manage HIV/AIDS, in particular, is scanty and not well documented. Consequently, this study aims to present the status and use of TM and determine the factors associated with its use among HIV/AIDS patients on HAART in a tertiary health institution in Northwest Nigeria.

**Methodology**

This was a descriptive, cross-sectional study involving HIV/AIDS patients attending Anti-Retroviral Treatment Center of the Usmanu Danfodiyo University Teaching Hospital (UDUTH), Sokoto, Nigeria. The hospital is a tertiary health training and research institution with a 700-bed capacity, serving as referral center to several hospitals within the northwestern region. It offers general and specialty services to patients at the general outpatient department and various specialty outpatient clinics including the ART clinic. The ART clinic is run by a multidisciplinary team of specialists from internal medicine, pediatrics, public health, and hematology departments of the hospital. The study population comprised PLWHAs attending the ART clinic of the hospital (UDUTH). Using the formula for cross-sectional study in a population <10,000[17] and a prevalence of 18.5% from a previous study,[18] a total of 271 respondents were recruited into the study using a table of random numbers and the ART register as the sampling frame.
The instrument of data collection was a set of pretested structured questionnaire which sought information on respondents’ sociodemographic characteristics, use of TM since diagnosis of infection, history of frequent passage of watery stool, HIV parameters, current ART regimen, and environmental factors (housing conditions and water supply). The questionnaires were administered by trained research assistants. A total of 262 questionnaires were found to be suitable for analysis, giving a response rate of 97%. All patients who were currently on ART not later than 1 year at the time of data collection were eligible and recruited into the study (eligibility criteria).

The questionnaires were entered into and analyzed using IBM Statistical Package for the Social Sciences (SPSS) statistical software package V 20. Analysis of data started with description of data using mean and standard deviation for quantitative variables and counts and frequencies for qualitative variables. This was followed by inferential statistics (multivariate logistic regression) which were used to identify the major determinants of TM usage at alpha level of 0.05. Ethical approval for this study was obtained from the ethical committee of the teaching hospital. Participants were informed of the objectives of the study that participation is voluntary, that they could opt out at any stage of the interview, and that all information will be treated as highly confidential. Informed consent was obtained from all participants in the study.

**Results**

Majority (70%) of the respondents were females, were mostly civil servants (26.7%), and had no any form of formal education (34.8%). Among them, 201 (76.7%) respondents resided in the rural areas [Table 1]. A total of 223 respondents had a mean CD4 count of 342±270 at diagnosis and 444±280 at the time of the study with a statistically significant \( P<0.001 \). The mean weight of the respondents was 58±15.6 at diagnosis and 65.7±18.0 at the time of the study with a statistically significant \( P<0.001 \) which is statistically significant [Table 2].

Table 2 shows that 59.3% (73) of the study participants had a WHO Stage 1 both at diagnosis and at the time of the study; 40.7% (50) had a WHO Stage 1 and 2 at diagnosis and at the time of the study, respectively. Of the 262 respondents, 251 (97.3%) were on HAART with 177 (70.5%) of them on AZT/3TC/NVP combination. A total of 87.6% (220) respondents on HAART were on the first-line regimen while 8% (20) of them were on the second-line regimen [Table 3]. Only 40 (19.1%) of the study participants had viral load report while 169 (80.9%) had no viral load. Majority (216, 91.9%) of the respondents on HAART were adherent, with 192 (77.4%) being on co-trimoxazole prophylaxis. Only 27 (21.4%) of the study participants were able to achieve 95% adherence rate to ART [Table 3].

On the clinical signs and symptoms presented by the respondents, 63 (24.2%) had diarrhea and abdominal discomfort, 21 (8%) had hematochezia, while 15 (5.7%) had vomiting [Table 4]. Most (127, 52.3%) of the respondents had ever done HbsAg with only 92 (40.4%) attending counseling sessions [Table 5].

Only 4 (1.5%) of the participants were found to be infected with *Entamoeba histolytica* and *Giardia lamblia* while 11 (4.2%) of the respondents had used TM before; out of whom, 9 (5%) were females and 2 (2.7%) were males with 11 (5.7%) having a WHO Stage 4 among users of TM [Tables 6 and 7]. Among users of TM, 4 (7.7%) had completed tertiary education, 8 (4.4%) of them resided in rural areas, while 5 (6.4%) of them had CD4 count <200. All the 11 respondents on TM had diarrhea at the time of the study while 3 (27.3%) of them had diarrhea [Table 7].

Of the 11 respondents who used TM, four of them had it ordered by parents, three by siblings, and four by others including friends; however, only one of the respondents had side effects following the use of TM and only three were satisfied with the outcome of use of the TM. Concerning the reasons for using TM, the most common reason was as a result of too much weight loss, 4 (36.4%), followed by constant fever 3 (27.3%) and frequent passage of watery stool 3 (27.3%), respectively [Table 8].

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**Table 1: Sociodemographic characteristics of study participant**

| Variable       | Frequency (%) |
|----------------|---------------|
| Gender         |               |
| Male           | 78 (30)       |
| Female         | 182 (70)      |
| If female      |               |
| Pregnant       | 32 (17.6)     |
| Not pregnant   | 40 (21.9)     |
| No response    | 110 (60.5)    |
| Occupation     |               |
| Unemployed     | 19 (7.3)      |
| Student        | 47 (17.9)     |
| Homemaker      | 71 (27.1)     |
| Civil servant  | 70 (26.7)     |
| Business       | 52 (19.9)     |
| No response    | 3 (1.2)       |
| Educational status |         |
| None           | 2 (0.8)       |
| Quranic        | 84 (32.1)     |
| Adult          | 5 (1.9)       |
| Primary        | 33 (12.6)     |
| Secondary      | 72 (27.5)     |
| Tertiary       | 53 (20.2)     |
| No response    | 13 (5)        |
| Residential    |               |
| Urban          | 40 (15.3)     |
| Rural          | 201 (76.7)    |
| No response    | 21 (8)        |

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Oche, et al.: Prevalence and factors associated with the use of TM among HIV/AIDS patients in Sokoto
Only 11 (4.2%) participants have used TM before. The results from univariate analysis using Chi-square tests are provided in Table 9. All variables, except occupation, were insignificant. However, for occupation, the minimum expected count (MEC) was only 0.13. For a sample size of 134, the MEC must be at least 1. After dropping the unemployed category (n = 2), the P = 0.152, which is >0.05. Thus, among the tested factors, none was a significant predictor of TM use.

Logistic regression was used to predict which bio-demographic variables fit with the use of TM among participants [Table 10]. The model contained six predictive variables (gender, educational level, occupation, religion, perceived satisfaction with services received at ART center, and health talks/counseling received). The model was statistically significant Chi-square (19, n = 263) 87.716; P < 0.000, indicating that the model was able to distinguish between participants who reported using TM alongside ART and those who were not using TM. The model accounted for 28.4% (Cox and Snell R^2) and 80% (Nagelkerke R^2) of variability among participants and correctly classified 79.6% of cases, which together with Hosmer and Lemeshow goodness-of-fit test indicated the model being useful with the P value of the later test of 0.997 which is larger than the alpha value of 0.05. However, only four of the six predictive variables in the model (education level, occupation, perceived satisfaction with services received at ART center, and health talks/counseling received) had significantly contributed to the model with P < 0.000 for all subgroups of occupation, and perceived satisfaction with services received at ART center influenced the use of TM among patients on ART [Table 11]. Furthermore, the model indicated that patients with less than postprimary education.
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In this study, only 11 (4.2%) of the study participants either had taken or are currently on any form of TM or the other. Shisana et al. in 2005 found a very low prevalence of 1.1% use of ATM among their subjects in South Africa. However, the low figure obtained from this South African study may not be unconnected to the fact that it involved a larger population since it was a national comprehensive HIV survey. The findings from our study are in contrast to that observed in a separate study from the Niger Delta region of Nigeria where the prevalence of TM use was found to be 27.9%. This observed difference in the prevalence rates from Nigeria could be attributed to the rich rainforest vegetation found in the southern parts the country where various plants with rich medicinal properties abound and also the presence of large number of persons who are adherents of the African traditional religion that celebrate and encourage the use of herbal remedies and invoke ancestral spirits in all spheres of life compared with the study area where Islam is the predominant religion. Similar low prevalence rate (8.9%) of use of TM was observed in another study from Pretoria, South Africa. Another study on the use of traditional CAM (TCAM) among HIV/AIDS patients from Kwazulu Natal, South Africa, found that 51.3% of their patients were using TCAM with 29.6% of them on herbal therapy. Studies from other countries have found high rates of TCAM utilization among people living with HIV ranging from 15% to 79%, with some researchers suggesting that people infected with HIV use TCAM at substantially higher rates than people with other serious illnesses.

In Nigeria, the resort to the use of TM by PLWHA may not be unrelated to the nonavailability and sometimes scarcity of the ART drugs in most centers coupled with unbearable side effects of the drugs. Anecdotal evidence has shown that most PLWHAs would rather patronize TM outlets instead of hospitals as they do not want to be stigmatized because of their HIV status. Furthermore, it has been suggested that unconventional therapies remain popular with AIDS patients due to the conventional healthcare system’s inability to provide a definitive cure for HIV infection. In Nigeria and other African countries, there have been claims and counter-claims of discoveries of cure for HIV/AIDS by TM practitioners, which have not been proven and therefore could be misleading and might have resulted in higher prevalence in different parts of Nigeria.

**Table 5: Laboratory results**

| Parameter          | At diagnosis | At present | Difference | P     |
|--------------------|--------------|------------|------------|-------|
| CD4 counts         | -            | -          | -          | -     |
| FBC:PCV            | 34.7±8.3 (n=118) | 36.3±9.5 (n=148) | 1.20±6.1 (n=87) | 0.074 |
| ALT                | 44.8±43.1 (n=111) | 31.6±18.2 (n=120) | 18.2±53.2 (n=62) | 0.009 |
| AST                | -            | -          | -          | -     |
| HbsAg              | -            | -          | -          | -     |
| Creatinine         | 67.6±34.8 (n=113) | 57.5±28.6 (n=123) | 5.0±34.7 (n=62) | 0.260 |
| Urea               | -            | -          | -          | -     |

- No measurements. ALT=Alanine transaminase, AST=Aspartate transaminase, FBC=Full blood count, PCV=Packed cell volume

**Table 6: Intestinal parasites in stool**

| Variable                        | Frequency |
|---------------------------------|-----------|
| Presence of intestinal parasites|           |
| Yes                             | 4 (1.5)   |
| No                              |           |
| If yes, which one               |           |
| *Entamoeba histolytica*         | 3         |
| *Ascaris lumbricoides*          | 0         |
| *Trichuriasis*                  | 0         |
| *Giardiasis*                    | 1         |

**Table 7: Traditional medicine use**

| Variable                  | n (%) |
|---------------------------|-------|
| Used TM                   | 11 (4.2) |
| TM placed by              |       |
| Parents                   | 4 (36.4) |
| Sibling                   | 3 (27.3) |
| Others                    | 4 (36.4) |
| Satisfied with TM         | 3 (27.3) |
| Experienced side effects with TM | 1 (9.0) |
| Currently taking          | 0      |

TM=Traditional medicine

**Table 8: Reasons for using traditional medicine**

| Reasons                                | n (%) |
|----------------------------------------|-------|
| Too much weight loss                   | 4 (36.4) |
| Constant fever not responding to orthodox medicine | 3 (27.3) |
| To improve appetite                    | 1 (9.1) |
| Frequent watery stool                  | 3 (27.3) |

are more likely to engage in the use of TM with odds ratio of more than 10 compared to those who had tertiary education.

**Discussion**

The use of conventional ART remains the only known remedy for the treatment of HIV/AIDS. However, for several reasons, other remedies have been introduced in the management of the disease including over-the-counter drugs, complementary and alternative medicines (CAM), as well as African TM (ATM).

In Nigeria, the resort to the use of TM by PLWHA may not be unrelated to the nonavailability and sometimes scarcity of the ART drugs in most centers coupled with unbearable side effects of the drugs. Anecdotal evidence has shown that most PLWHAs would rather patronize TM outlets instead of hospitals as they do not want to be stigmatized because of their HIV status. Furthermore, it has been suggested that unconventional therapies remain popular with AIDS patients due to the conventional healthcare system’s inability to provide a definitive cure for HIV infection. In Nigeria and other African countries, there have been claims and counter-claims of discoveries of cure for HIV/AIDS by TM practitioners, which have not been proven and therefore could be misleading and might have resulted in higher prevalence in different parts of Nigeria.
it was reported that HIV-infected patients used herbal and medicinal plants extensively, some of which their active agents have been determined, and successfully tested in clinical studies.[28] In the Alma-Ata Declaration of 1978, recognition was given to the role of TM and its practitioners in achieving health for all. This is aimed at governments giving recognition to TM for the health of the people and institutionalizing its operations.[29]

About half of the respondents using TM had CD4 count <200 and this might weigh them down necessitating the use of alternative medicines. The most common reason for the use of TM by our study participants was to correct weight loss. This is not surprising considering the fact that most of them had very low CD4 counts pointing to full-blown AIDS with resultant loss of weight. Some other respondents used TM to treat fever. A similar study from the Niger Delta region of Nigeria observed that their study participants resorted to the use of CAM because of their naturalness and also to correct weight loss.[20]

Findings from several studies have shown that people living with HIV self-report that CAM is helpful in improving their quality of life with relatively few risk factors associated with their use.[30-32]

People living with HIV also self-report that CAM use helps prevent and alleviate symptoms related to HIV, as well as side effects of treatment.[30-33]

Studies from the United States of America observed that the most common reason for using CAM among PLWHA was to relieve pain.[34,35]

Our findings showed that all the subjects that resorted to the use of TMs assumed the “sick role” where they were at the mercies of people around who more often than not recommended and even go extra miles to procure these TM for them. In some other communities, relations of PLWHA seek divine interventions by going spiritual either by individual prayers or took them to spiritual homes. This is buttressed by the findings from studies among Black African HIV-positive patients in the UK which found that religion, as well as providing a spiritual coping mechanism for dealing with difficult life events, also provided practical support as a family might.[36-38]

**Conclusion**

The prevalence of use of TM was low among our study participants with the most common reason for its use being as a result of too much weight loss. Only one of our study participants experienced side effects following the use of TM which could be as a result of interaction between the TM and conventional ART. Similar cases of medical pluralism are bound to occur as long as conventional ART is not within reach of most patients. Concerns have been raised about the potentially serious interactions between African traditional herbs and conventional drugs used by PLWHA as the pharmacodynamic and pharmacokinetic interactions between these combinations are rarely determined. This calls for urgent need on the part of the government and other stakeholders in the health sector to harmonize and institutionalize the use of ATM.

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Nil.

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**Table 9: Factors influencing the use of traditional medicine**

| Variable                  | Used TM | P     |
|---------------------------|---------|-------|
| Gender (254)              |         |       |
| Male (75)                 | 2 (2.7) | 0.399 |
| Female (179)              | 9 (5.0) |       |
| Occupation (134)          |         |       |
| Unemployed (2)            | 1 (50)  | 0.028*|
| Student (20)              | 0       |       |
| Homemaker (44)           | 3 (3.6) | 0.152**|
| Civil servant (43)       | 5 (11.6)|       |
| Business (25)            | 0       |       |
| Educational status (242) |         |       |
| None (2)                  | 0       |       |
| Quranic (82)              | 2 (2.4) | 0.220 |
| Adult (5)                 | 1 (20)  |       |
| Primary (33)              | 0       |       |
| Secondary (70)            | 3 (4.3) |       |
| Tertiary (52)             | 4 (7.7) |       |
| Residential (236)        |         |       |
| Urban (39)                | 2 (5.1) | 0.762 |
| Rural (197)               | 8 (4.1) |       |
| CD at diagnosis (218)     |         |       |
| ≤200 (78)                 | 5 (6.4) | 0.337 |
| >200 (140)                | 5 (3.6) |       |
| ART (252)                 |         |       |
| Yes (245)                 | 11 (4.5)| 0.566 |
| No (7)                    | 0       |       |
| Diarrhea (254)            |         |       |
| Yes (63)                  | 3 (4.8) | 0.846 |
| No (191)                  | 8 (4.2) |       |

*Before dropping Unemployed category, **After dropping Unemployed category. TM=Traditional medicine

| Model fitting information | R² |
|---------------------------|----|
| Model                     |    |
| -2 Log likelihood         |    |
| χ²                        |    |
| df                        |    |
| Significant               |    |
| Cox and Snell             |    |
| Nagelkerke                |    |
| Hosmer and Lemeshow test  |    |
| Constant                  |    |
| 1.208                     |    |
| 87.716                    |    |
| 19                        | 0.000 |
| 0.284                     |    |
| 0.800                     |    |
| 0.997                     |    |
| Final model               |    |
| 27.334                    |    |
| 87.716                    |    |
| 19                        | 0.000 |
| 0.284                     |    |
| 0.800                     |    |
| 0.997                     |    |

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**Table 10: Predictive model on the use of traditional medicine among human immunodeficiency virus and acquired immunodeficiency syndrome patients**

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Table 11: Factors that influenced the use of traditional medicine among people living with human immunodeficiency virus and acquired immunodeficiency syndrome in the equation

| B    | SE    | Wald | df | Significant | Exp(B) | 95.0% CI for exp(B) |
|------|-------|------|----|-------------|--------|---------------------|
|      |       |      |    |             |        | Lower               |
|      |       |      |    |             |        | Upper               |

Step 1*

Gender

- Male: 1.219, 0.368, 1, 0.544, 3.385, 0.066, 174.117
- Female: 1.798, 0.919, 1, 0.338, 6.035, 0.153, 238.066

Education

- None: 16.172, 25,949.320, 0.000, 1, 1.000, 1.0557, 0.998
- Quranic: 0.102, 2.072, 0.002, 1, 0.961, 1.108, 0.019, 64.300
- Adult literacy course: 14.816, 13,171.305, 0.000, 1, 0.999, 2,718,633.558, 0.000
- Primary: 16.582, 5962.371, 0.000, 1, 0.998, 1.5907, 0.000
- Secondary: −0.812, 1.891, 0.184, 1, 0.668, 0.444, 0.011, 18.080
- Tertiary: 15.998, 4709.040, 0.000, 1, 0.997, 8,870,563.374, 0.000

Occupation

- Unemployed: 15.387, 4.9097, 0.000, 1, 1.000, 4,813,338.440, 0.000
- Student: 16.312, 7674.651, 0.000, 1, 0.998, 1.2147, 0.000
- Homemaker: 16.654, 5282.693, 0.000, 1, 0.997, 1.7097, 0.000
- Civil servant: 16.719, 6151.151, 0.000, 1, 0.998, 1.8237, 0.000
- Business: 17.249, 7307.404, 0.000, 1, 0.998, 3.0997, 0.000

Religion

- Islam: 18.081, 5388.167, 0.060, 1, 0.997, 6.8417, 0.000
- Christianity: 1.555, 1.229, 1.600, 1, 0.206, 4.735, 0.425, 52.700

Satisfaction

- Satisfied: −72.011, 25,526.579, 0.000, 1, 0.998, 0.000, 0.000
- Not satisfied: −55.829, 13,644.114, 0.000, 1, 0.997, 0.000, 0.000

Health talk

- Received: 0.283, 1.785, 0.025, 1, 0.874, 1.328, 0.040, 43.881
- No health talk: 19.361, 40,192.970, 0.000, 1, 1.000, 2.5628, 0.000

Constant

- 0.520, 1.381, 0.142, 1, 0.707, 1.682

*Variable(s) entered on Step 1: Gender, education, occupation, religion, perceived satisfaction, health talk. SE=Standard error

Conflicts of interest

There are no conflicts of interest.

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