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A cross-sectional survey of mental health literacy among undergraduate students of University of Nigeria

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3 **Title: A cross-sectional survey of mental health literacy among undergraduate students of**
4 **University of Nigeria**
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Abstract

Objective: This study sought to assess knowledge of schizophrenia and help-seeking behavior among undergraduate students of a Nigerian university. Socio-demographic predictors of correct recognition were also explored.

Design: The study was a cross-sectional descriptive survey.

Setting: The study was carried out in University of Nigeria, a premiere university located in South-eastern Nigeria.

Participants: Undergraduate students of the University of Nigeria.

Methods: All consenting male and female students of three randomly selected faculties were recruited for the study. Self-administered vignette-based questionnaires were distributed to students of the selected faculties. Data were analyzed with IBM Statistical Products and Service Solutions (SPSS) for Windows, Version 20.0).

Results: Out of the 400 questionnaires that were distributed, 389 were completed and returned (97.3% response rate). Respondents were mainly female (64.9%, n = 252) within the age of 18 and 24 years (75.8%, n = 294). One in eight respondents (12.1%, n = 47) correctly identified and labelled the Schizophrenia vignette. Hallucination was the most identified symptom of distress for schizophrenia (47.9%, n = 186). The most common alternative label for Schizophrenia was Emotional problem (24.7%, n=96). Schizophrenia was also mislabeled as Depression (11.6%, n = 45). More than a tenth of the respondents used stigmatizing labels such as 'Crazy' and 'Mad' (11.1%, 43). Respondents identified Psychiatrist as the most common source of help they thought was required for the schizophrenia vignette (36.3%, n = 141). There was a strong evidence of association between faculty of study and ability to correctly identify and label the schizophrenia vignette ($X^2 = 44.557$, $p = 0.000$).

Conclusion: Overall mental health literacy among University of Nigeria Students was poor. Research on culturally sensitive interventions to improve mental health literacy should be embarked on.

Keywords: Mental health literacy, Knowledge, schizophrenia, students, Nigeria,

Strengths and Limitations of this study

- A vignette-based questionnaire which allows respondents to articulate their own thoughts was used.
- This study is the first of its kind to be carried out among undergraduate students in Nigeria.
- Students were recruited in just one university which limits generalizability of the findings.
- This research has relied on the use of brief written case vignettes. The extent to which such data can be translated into what actually is likely to happen in the real world is unclear.

Background

Mental disorders are the fourth leading cause of disability in the people aged 15-44 years.¹The Global Economic Burden of Non-communicable Diseases report showed mental disorders to be the largest cost driver, equating to \$2.5 trillion in global costs in 2010, where the costs for mental disorders were found to be higher than the costs of diabetes, respiratory disorders and cancer combined.² Both the general public and the mentally ill have been found to have stigmatizing attitudes towards psychiatric illnesses.³ Hayward and Bright have defined stigma associated with mental disorders as “the negative effects of a label placed on any group, such as a racial or religious minority, or, in this case, those who have been diagnosed as mentally ill”.³ Popular misconceptions about mentally ill people include; being dangerous, weak and socially incompetent.³

Jorm et al. have defined Mental Health Literacy (MHL) as the knowledge and beliefs about mental disorders which aid their recognition, management or prevention.⁵ The concept of mental health literacy suggests that it is important for knowledge about mental health aspects and mental disorders to increase since it is a prerequisite for early recognition and seeking treatment.⁴ Mental health literacy and social rejection studies are particularly important as they suggest that inaccurate recognition and false beliefs about schizophrenia raise social distance toward those suffering from this disorder.⁵

The increasing burden of mental disorders has been accompanied by worldwide efforts to educate and increase awareness among the general public about mental illness. These efforts are important as the general public is not well informed about mental illness and this lack of information has been linked with negative attitudes towards persons with mental illness and stigmatization.⁵ This

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3 in turn impacts upon persons suffering with mental illness, making them less likely to seek help
4 from relevant mental health professionals. Despite increased knowledge and improving attitudes
5 in more developed nations, lower- and middle-income countries still lag far behind.^{6,7} Studies
6 across different countries have shown that developing countries have a greater belief that the
7 etiology of schizophrenia is based on sociological rather than biological factors and generally,
8 have less knowledge about the disorder.^{8,9} Also, it has been found out individuals from developing
9 countries are less likely to seek professional help for mental illness than are individuals from more
10 developed countries.¹⁰ A worrisome public health problem partly related to mental health literacy
11 is the presence of a huge treatment gap for treatable psychiatric disorders.¹³ In spite of the
12 availability of effective treatment for schizophrenia, a huge treatment gap persist especially in low
13 and middle income countries where less than one in ten affected individuals receive treatment.¹¹
14 Mental health literacy is especially important among university students as research has shown
15 than about one-third of university aged students suffer from a diagnosable mental disorder, and
16 64% of individuals who dropped out of college did so because of a mental disorder.¹²⁻¹⁴ Although
17 75% of lifetime disorders have their onset during college years,¹⁸⁻²⁰ studies have also shown that
18 college students cannot effectively recognize their own mental illness or symptoms.¹⁵ Also,
19 attitudes towards disease are often cemented during this formative time of development.
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33 Most studies on mental health literacy among young people in Nigeria has been among Secondary
34 school students. This study is the first of its kind to be carried out among undergraduate students
35 in Nigeria.
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39 **Research methods and design**

40 **Study design and setting**

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42 This study used a cross-sectional descriptive approach and was carried out among undergraduate
43 students of University of Nigeria, Nsukka. University of Nigeria is one of the premiere universities
44 in Nigeria created in 1970 and boasts of having students with diverse ethnicities.
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50 **Study population and sampling strategy**

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52 A simple randomized system was adopted in the selection of three faculties among the several
53 faculties in the university. On the basis of the most conservative response distribution of 50%,
54 allowing 0.5% margin of error at 95% confidence interval, the minimum sample size was
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3 calculated to be 384. A total of 400 students were recruited for the study. Collection of data from
4 the students of the three faculties was done using convenience sampling method.
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7 **Data Collection and Instrument**

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9 The participants were presented a vignette-based questionnaire. An already established vignette,
10 first developed by Jorm *et al.*, was adapted and utilized to fit this study's aims.⁵The vignette
11 detailed a student who satisfied the symptomatology of schizophrenia according to the Diagnostic
12 and Statistical Manual of Mental Disorders, 4th Edition (DSM-IV).²³ The vignette was followed
13 by open-ended questions designed to elicit the participants' recognition of schizophrenia and their
14 recommended source of help.
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20 **Data analysis**

21 Data were analyzed with IBM Statistical Products and Service Solutions (SPSS) for Windows,
22 Version 20.0. Descriptive statistics such as frequencies, percentages or mean values were
23 computed for relevant socio-demographic characteristics, knowledge of depression items, and
24 recommended sources of help. Chi-Square tests were performed to find associations between
25 independent and the dependent variables with significance set at <0.05 . The open ended responses
26 were grouped based on similarity of thematic content and frequencies/percentages reported.
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33 **Ethical considerations**

34 Ethical clearance for the study was gotten from the University of Nigeria Ethical committee. A
35 verbal consent was obtained from the participants and they were assured of the confidentiality of
36 the information that they would give.
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42 **Patient/Public involvement**

43 No respondents were involved in defining the research question or the outcome measures, nor were
44 they involved in the design and implementation of the study. There are no plans to involve
45 respondents in the dissemination of the results.
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50 **1.3 Results**

51 Out of the 400 questionnaires that were distributed, 389 were completed and returned (97.3%
52 response rate). Respondents were mainly female (64.9%, $n = 252$) within the age of 18 and 24
53 years (75.8%, $n = 294$). The faculty of Agricultural sciences had the most respondents (48.7%, n
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3 = 187). More than a quarter of the students surveyed were in their second year of study (27.1%, n
4 = 105). (Table 1) Respondents were asked 'What do you think is the matter' with the character in
5 the vignette. Responses were coded as 'Schizophrenic' in the presence of the words
6 'schizophrenic/schizophrenia'. Other responses were categorized based on similarity of thematic
7 content. The most common alternative label for Schizophrenia was Emotional problem (24.7%,
8 n=96). Schizophrenia was also mislabeled as Depression (11.6%, n = 45). More than a tenth of the
9 respondents used stigmatizing labels such as 'Crazy' and 'Mad' (11.1%, 43). One in eight
10 respondents (12.1%, n = 47) correctly identified and labelled the Schizophrenia vignette. (Table
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19 For the Schizophrenia vignette, respondents were asked to note what parts of the vignette gave
20 them the strongest hints of emotional distress for the character. Hallucination was the most
21 identified symptom of distress for schizophrenia (47.9%, n = 186) while Personal neglect was the
22 least identified symptom (14.9%, n = 58). Results of which symptoms were reported in the
23 'schizophrenia' vignette are listed in Table 3. Respondents were asked to recommend a source of
24 help for the character in the vignette. The 'Counsellor' category included the mention of the terms
25 'counsellor', 'counseling' and 'church counselor'. 'Friend', 'classmate' and 'roommate' were
26 combined into the 'Friends' category. The 'Family' category included the responses of 'family',
27 'parents', 'Elders' and 'siblings/brother/sister'. The use of the more specific terms 'Psychologist'
28 or 'Psychiatrist' were afforded their own categories. Respondents identified Psychiatrist as the
29 most common source of help they thought was required for the schizophrenia vignette (36.3%, n
30 = 141). About a fifth of the sample population recommended a Psychologist (20.4%, n = 79).
31 Table 4. A higher percentage of males (14.7%) than females (10.7%) correctly identified and
32 labelled the schizophrenia vignette. A higher proportion of females (37.3%) recommended a
33 psychiatrist for the schizophrenia vignette than males (34.3%). Respondents between 25-30 years
34 (39.6%, n = 21) had the greatest proportion of respondents who correctly identified and labelled
35 schizophrenia. Students of the Faculty of Pharmaceutical sciences also had the greatest proportion
36 of respondents who correctly identified and labeled the schizophrenia vignette (28.8%, n = 34).
37 There was a strong evidence of association between faculty of study and ability to correctly
38 identify and label the schizophrenia vignette ($X^2 = 44.557$, $p = 0.000$). The faculty of Agricultural
39 sciences had the greatest of respondents who used stigmatizing labels for the schizophrenia
40 vignette (21%, n=17). There was a strong evidence of association between faculty of study and
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3 use of stigmatizing label for the schizophrenia vignette ($X^2 = 13.676$, $p = 0.001$). There was a
4 strong evidence of association between faculty of study and recommending a Psychiatrist for the
5 schizophrenia vignette ($X^2 = 25.161$, $p = 0.000$). (Table 5) There was a strong evidence of
6 association between Study level and ability to correctly identify and label the schizophrenia
7 vignette ($X^2 = 33.175$, $p = 0.000$).
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12 Discussion

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15 The use of a vignette-based questionnaire was employed in this study, which allowed respondents
16 to express their own thoughts and beliefs, rather than to select answers from a pool. Vignettes have
17 been found to provide a valuable approach that is acceptable to participants and elicits important
18 insight on participant experience and opinions.¹⁶ The response rate of the study was high and
19 comparable to response rates obtained from studies carried out among University students.^{17,18}
20 There were more female respondents than male respondents which corresponds with findings from
21 a similar study carried out among university students in Malaysia.¹⁹ Research among
22 undergraduate students has shown that response rates vary by gender with females being more
23 likely to respond than males.^{20,21} Most of the respondents fell within the age 18 and 24 years and
24 were in their second year of study. This is in line with the 6-3-3-4 system of education obtainable
25 in Nigeria where the minimum age of entry into public universities is pegged at 16 years. The 6-
26 3-3-4 system was introduced in 1987 following the introduction of the National Policy on
27 Education.²² This was introduced to bring uniformity to the structure of education throughout the
28 country.
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32 About one in eight (12.1%) of the University students surveyed could correctly identify and label
33 the Schizophrenia vignette. This proportion of university students is much lower than the 60
34 percent of University students who correctly identified and labeled a schizophrenia vignette in a
35 study carried out in Singapore.²³ This may be because the Singaporean study was restricted to
36 medical students only. Even though many respondents were unable to recognize the problem as
37 schizophrenia, some of respondents (24.7%) did identify that the character's problem was a mental
38 illness. While some researchers insist that accurate labelling of the disorder is essential for
39 appropriate help seeking,²⁴⁻²⁶ others argue that accurate 'diagnosis' by laypeople may not
40 necessary as long as there is recognition of the presence of a mental health problem that warrant
41 help-seeking from mental health professionals.²⁷
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3 Ironically, some of the respondents (11.6%) thought the character in the schizophrenia vignette
4 was depressed. More than a tenth of the respondents used stigmatizing labels such “Crazy”, “Mad”
5 and “Insane”. Similar findings have also been reported in Nigeria and other parts of the world ^{28–}
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7 ³¹. Stigma towards mental illness stems from the traditional concept of danger and incompetence,
8 which is even more evident in the case of major psychiatric illnesses such as schizophrenia.^{31,32}
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10 Five respondents reported that the vignette was a drug addict despite the fact that the vignette
11 clearly noted that the character was not on drugs. Whether or not drug abuse is a causative factor
12 in the etiology of schizophrenia has long been debated, and the relationship between
13 psychostimulant use and psychotic symptoms has been well documented over the years. Cannabis
14 intoxication is well known to precipitate acute psychotic episodes and to worsen symptoms of
15 existing psychotic illness,^{33,34} but controversy still surrounds the notion that cannabis misuse could
16 result in a prolonged schizophrenic illness.
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25 Hallucination was the most frequently recognized symptom of schizophrenia by the respondents.
26 Hallucinations have been defined by the Diagnostic and Statistical Manual of Mental Disorders
27 fifth edition (DSM-5) as: “perception-like experiences that occur without an external stimulus.
28 They are vivid and clear, with the full force and impact of normal perceptions, and not under
29 voluntary control. [43] Hallucinations have been described in various clinical populations, but they
30 are neither disorder nor disease specific. They are also frequent in non-clinical populations,³⁵ and
31 an important interest has been developed for voice-hearing in the general population. In
32 schizophrenic patients, hallucinations can be observed in any of the sensory modalities. In 59% of
33 the cases they are auditory in nature, and in 27% of those cases visual hallucinations are also
34 experienced at some point.³⁶ About one third of the respondents recommended the help of a
35 psychiatrist while one fifth of them recommended the help of a psychologist. Thirteen respondents
36 referred the vignette character to a rehab facility since they were convinced that the character was
37 a drug addict.
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48 The faculty of Pharmaceutical sciences had the greatest proportion of students who correctly
49 recognized and identified the schizophrenia vignette. The highest number of respondents who
50 recommended a psychiatrist for the schizophrenia vignette were from the faculty of
51 Pharmaceutical sciences. This finding is particularly of interest since student pharmacists are
52 future health care professionals. It is particularly important for pharmacists who provide
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3 information not only to patients but also to their families and the general population to be well
4 informed and aware of the role stigma plays as an obstacle to improving mental health care and
5 quality of life for people with psychopathology (such as schizophrenia). This is essential in the
6 context of the efforts that must be made to reduce the enormous treatment gap for mental disorders
7 by increasing the identification and appropriate referrals in community pharmacy settings. The
8 ability to correctly recognize and identify schizophrenia increased with increasing level of study.
9 This is expected as increasing study level corresponds to increasing age and exposure and possible
10 psychological challenges in the university. This association was statistically significant.

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18 The strength of this study lies in the fact that a vignette-based questionnaire which allows
19 respondents to articulate their own thoughts was used. Although the present study might make
20 useful contributions to the literature on mental health literacy of university students, there are a
21 number of limitations that should be mentioned. This research has relied on the use of brief written
22 case vignettes. The extent to which such data can be translated into what actually is likely to happen
23 in the real world is unclear. Secondly, students were recruited in just one university; it would be
24 desirable to include students from different universities as this may provide a broader picture of
25 the phenomenon of mental health literacy in the particular population. However, this may not count
26 much since the university is a federal university with a heterogeneous mix of students from
27 different ethnic groups and backgrounds

35 **Conclusion**

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38 About one in eight university students surveyed could identify and label the schizophrenia
39 vignette. Hallucination was the most recognized symptom of schizophrenia. Psychiatrists were
40 mostly recommended for schizophrenia. Age, Faculty of study and Study level were all associated
41 with parameters of Mental health literacy. Overall, Mental health literacy among University of
42 Nigeria Students was fair. In light of the findings of this study, further studies should be carried
43 out in other Nigerian universities to investigate their mental health literacy to ensure
44 generalizability of our findings. Furthermore, research on culturally sensitive interventions to
45 improve mental health literacy should be embarked on.

52 **Contributors**

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3 MJO was the project leader, DOA was responsible for the project design. VUO made conceptual
4 contributions. DOA wrote the manuscript and all authors read and revised the manuscript.
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15 Competing interests

16 None declared
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19 Patient consent

20 Obtained.
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23 Ethics approval: Ethical clearance for the study was gotten from the University of Nigeria Ethical
24 committee
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27 Data sharing statement: Readers who wish to gain access to the data can write to the corresponding
28 author at aluhdeborah@yahoo.com
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34 **Table 1: Socio-demographic Characteristics of the Respondents**

Characteristics	Frequency N = 388	Percentage (%)
Gender		
Male	136	35.1
Female	252	64.9
Age (years)		
< 18	38	9.8
18-24	294	75.8
25-30	53	13.7
>30	3	0.8
Faculty		
Agricultural Sciences	189	48.7

Arts	81	20.9
Pharmaceutical Sciences	118	30.4
Study Level		
100	78	20.1
200	105	27.1
300	100	25.8
400	70	18.0
500	35	9.0

Table 2: Recognition of the case vignette of Schizophrenia by the respondents

Variable	Frequency	Percentage
Alternative labels		
Emotional issues	48	12.4
Spiritual issues	16	4.1
Crazy/Mad	43	11.1
Depression	45	11.6
On drugs	5	1.3
Mentally ill	96	24.7
Correctly label		
Schizophrenia	47	12.1

Table 3: Identified symptoms for Schizophrenia vignette

Item	Frequency	Percentage
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Hallucination	186	47.9
Social withdrawal	155	40.4
Personal neglect	58	14.9
Paranoia	90	23.2

Table 4: Recommended Sources of help for the schizophrenia vignette

Variable	Frequency	Percentage
Psychiatrist	141	36.3
Friends	8	2.1
Counsellor	41	10.6
God	38	9.8
Psychologist	79	20.4
Physician	56	14.4
Parents	13	3.4
Rehab	13	3.4

Table 5: Association between Respondents' faculties and parameters of mental health Literacy

Variable	Total	Faculty			X ²	P-value
		†Pharm.	‡Agric.	Arts		
Label						
Schizophrenia	47 (12.1)	34 (28.8)	3 (3.7)	10 (5.3)	44.557	0.000*
Crazy/Mad	43 (11.1)	5 (4.2)	17 (21.0)	21 (11.1)	13.676	0.001*
Source of help						
Psychiatrist	141 (36.3)	60 (50.8)	13 (16.0)	68 (36.0)	25.161	0.000*
Friends	7 (1.8)	4 (3.4)	0(0)	3(1.6)	4.265	0.371
Family	20 (5.2)	6 (5.1)	6 (7.4)	8 (4.2)	1.171	0.557

*Statistical significance at p<0.05, †Pharmaceutical Sciences, ‡Agricultural Sciences

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A cross-sectional survey of mental health literacy among undergraduate students of University of Nigeria

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36 Abstract

37 Objective: This study sought to assess knowledge of schizophrenia and help-seeking behavior
38 among undergraduate students of a Nigerian university. Socio-demographic predictors of correct
39 recognition were also explored.

40 Design: The study was a cross-sectional descriptive survey.

41 Setting: The study was carried out in University of Nigeria, a premiere university located in South-
42 eastern Nigeria.

43 Participants: Undergraduate students of the University of Nigeria.

44 Methods: All consenting male and female students of three randomly selected faculties were
45 recruited for the study. Self-administered vignette-based questionnaires were distributed to
46 students of the selected faculties. Data were analyzed with IBM Statistical Products and Service
47 Solutions (SPSS) for Windows, Version 20.0).

48 Results: Out of the 400 questionnaires that were distributed, 389 were completed and returned
49 (97.3% response rate. Respondents were mainly female (64.9%, n = 252) within the age of 18 and
50 24 years (75.8%, n = 294). One in eight respondents (12.1%, n = 47) correctly identified and
51 labelled the Schizophrenia vignette. Hallucination was the most identified symptom of distress for
52 schizophrenia (47.9%, n = 186). The most common alternative label for Schizophrenia was
53 Emotional problem (24.7%, n=96). Schizophrenia was also mislabeled as Depression (11.6%, n =
54 45). More than a tenth of the respondents used stigmatizing labels such as 'Crazy' and 'Mad'
55 (11.1%, 43). Respondents identified Psychiatrist as the most common source of help they thought
56 was required for the schizophrenia vignette (36.3%, n = 141). There was a strong evidence of
57 association between faculty of study and ability to correctly identify and label the schizophrenia
58 vignette ($X^2 = 44.557$, $p = 0.000$).

59 Conclusion: Mental health literacy among students of University of Nigeria was poor. Research
60 on culturally sensitive interventions to improve mental health literacy should be embarked on.

61 Keywords: Mental health literacy, Knowledge, schizophrenia, students, Nigeria,

62

63 **Strengths and Limitations of this study**

- 64 • A vignette-based questionnaire which allows respondents to articulate their own thoughts
65 was used.
- 66 • This study is the first of its kind to be carried out among undergraduate students in Nigeria.
- 67 • The study had a high response rate.
- 68 • Students were recruited in just one university which limits generalizability of the findings.
69 The extent to which responses based on brief written case vignettes can be translated into
70 what actually is likely to happen in the real world is unclear

71 **Background**

72 Mental disorders are the fourth leading cause of disability in people aged 15-44 years.¹The Global
73 Economic Burden of Non-communicable Diseases report showed mental disorders to be the largest
74 cost driver, equating to \$2.5 trillion in global costs in 2010, where the costs for mental disorders
75 were found to be higher than the costs of diabetes, respiratory disorders and cancer combined.²
76 Both the general public and the mentally ill have been found to have stigmatizing attitudes towards
77 psychiatric illnesses.³ Hayward and Bright have defined stigma associated with mental disorders
78 as “the negative effects of a label placed on any group, such as a racial or religious minority, or,
79 in this case, those who have been diagnosed as mentally ill”.³ Popular misconceptions about
80 mentally ill people include; being dangerous, weak and socially incompetent³

81 The increasing burden of mental disorders has been accompanied by worldwide efforts to educate
82 and increase awareness among the general public about mental illness. These efforts are important
83 as the general public is not well informed about mental illness and this lack of information has
84 been linked with negative attitudes towards persons with mental illness and stigmatization.⁴ Stigma
85 has been defined as social devaluation of a person due to an attribute that is deeply
86 discrediting⁵. Stigmatization impacts upon persons suffering with mental illness, making them less
87 likely to seek help from relevant mental health professionals. A worrisome public health problem
88 partly related to stigmatization is the presence of a huge treatment gap for treatable psychiatric
89 disorders.⁶ In spite of the availability of effective treatment for schizophrenia, a huge treatment
90 gap persist especially in low and middle income countries where less than one in ten affected
91 individuals receive treatment.⁷ Despite increased knowledge and improving attitudes in more

1
2
3 92 developed nations, lower- and middle-income countries still lag far behind.^{8,9} Studies across
4
5 93 different countries have shown that developing countries have a greater belief that the etiology of
6
7 94 schizophrenia is based on sociological rather than biological factors and generally, have less
8
9 95 knowledge about the disorder.^{10,11} Also, it has been found out individuals from developing
10
11 96 countries are less likely to seek professional help for mental illness than are individuals from more
12
13 97 developed countries.¹² Evidence from High-income countries have shown that social contact
14
15 98 between people with and without experience of mental illness¹³ and educational interventions⁶ are
16
17 99 the most effective interventions for reducing stigmatization in adults and young people
18
19 100 respectively. There is paucity of evidence on which interventions are effective and feasible in
20
21 101 LMIC's¹⁴.

22
23 102 Jorm et al. have defined Mental Health Literacy as the knowledge and beliefs about mental
24
25 103 disorders which aid their recognition, management or prevention.⁵ The concept of mental health
26
27 104 literacy suggests that it is important for knowledge about mental health aspects and mental
28
29 105 disorders to increase since it is a prerequisite for early recognition and seeking treatment.¹⁵ Mental
30
31 106 health literacy and social rejection studies are particularly important as they suggest that inaccurate
32
33 107 recognition and false beliefs about schizophrenia raise social distance toward those suffering from
34
35 108 this disorder.⁴ Mental health literacy is especially important among university students as research
36
37 109 has shown that about one-third of university aged students suffer from a diagnosable mental
38
39 110 disorder, and 64% of individuals who dropped out of college did so because of a mental
40
41 111 disorder.¹⁶⁻¹⁸ Although 75% of lifetime disorders have their onset during college years,¹⁸⁻²⁰
42
43 112 studies have also shown that college students cannot effectively recognize their own mental illness
44
45 113 or symptoms.¹⁹ Also, attitudes towards disease are often cemented during this formative time of
46
47 114 development.

48
49 115 This study sought to assess mental health literacy of undergraduate students in terms of their ability
50
51 116 to correctly label schizophrenia, symptom recognition and their preferred source of help. Most
52
53 117 studies on mental health literacy among young people in Nigeria has been among Secondary
54
55 118 school students. This study is the first of its kind to be carried out among undergraduate students
56
57 119 in Nigeria.

58 120 **Research methods and design**

59 121 **Study design and setting**

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2
3 122 This study used a cross-sectional descriptive approach and was carried out among undergraduate
4
5 123 students of University of Nigeria, Nsukka. University of Nigeria is one of the premiere universities
6
7 124 in Nigeria created in 1970 and boasts of having students with diverse ethnicities.

8 9 125 **Study population and sampling strategy**

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11 126 .Three faculties comprising one medically-related and two non-medically related faculties were
12
13 127 purposively selected for the study. The Faculties were selected because they had the most number
14
15 128 of students (11,779 students representing almost half of the total student population) and also had
16
17 129 a relatively even gender distribution. Given that a total 28047 students were enrolled in the
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19 130 university as at September 2018, on the basis of the most conservative response distribution of
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21 131 50%, allowing 0.5% margin of error at 95% confidence interval, the minimum sample size was
22
23 132 calculated to be 379. A total of 400 students were recruited for the study. Collection of data from
24
25 133 the students of the three faculties was done using convenience sampling method. The
26
27 134 questionnaires were distributed to all consenting students who were present in their faculty lecture
28
29 135 theatres during the study period. In a covering letter accompanying the survey instrument
30
31 136 respondents were informed of the purpose of the survey together with an assurance of
32
33 137 confidentiality and anonymity.

34 35 138 **Data Collection and Instrument**

36
37 139 The participants were presented a vignette-based questionnaire. An already established vignette,
38
39 140 first developed by Jorm *et al.*, was adapted and utilized to fit this study's aims.⁵The name in the
40
41 141 vignette was substituted with an indigenous name in the study setting and the character was
42
43 142 presented as a university student. The vignette detailed a student who satisfied the symptomatology
44
45 143 of schizophrenia according to the Diagnostic and Statistical Manual of Mental Disorders, 4th
46
47 144 Edition (DSM-IV).²⁰ The vignette was followed by open-ended questions designed to elicit the
48
49 145 participants' recognition of schizophrenia and their recommended source of help. A copy of the
50
51 146 questionnaire is included as a supplementary material.

52 53 147 **Data analysis**

54
55 148 Data were analyzed with IBM Statistical Products and Service Solutions (SPSS) for Windows,
56
57 149 Version 20.0. Descriptive statistics such as frequencies, percentages or mean values were
58
59 150 computed for relevant socio-demographic characteristics, knowledge of schizophrenia items, and

1
2
3 151 recommended sources of help. Chi-Square tests were performed to find associations between
4
5 152 independent and the dependent variables with significance set at <0.05 . The open ended responses
6
7 153 were grouped based on similarity of thematic content using a deductive approach. The principal
8
9 154 researcher developed the interpretation of the themes generated and final interpretations were
10
11 155 accepted by consensus of all the authors. Data were presented as frequencies/percentages.

12 156 **Ethical considerations**

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15 157 Ethical clearance for the study was gotten from the University of Nigeria Ethical committee. A
16
17 158 verbal consent was obtained from the participants and they were assured of the confidentiality of
18
19 159 the information that they would give.

20 160 **Patient/Public involvement**

21
22
23 161 No respondents were involved in defining the research question or the outcome measures, nor were
24
25 162 they involved in the design and implementation of the study. There are no plans to involve
26
27 163 respondents in the dissemination of the results.

28 164 **1.3 Results**

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30
31 165 Out of the 400 questionnaires that were distributed, 389 were completed and returned (97.3%
32
33 166 response rate). Respondents were mainly female (64.9%, $n = 252$) within the age of 18 and 24
34
35 167 years (75.8%, $n = 294$). The faculty of Agricultural sciences had the most respondents (48.7%, n
36
37 168 = 187). More than a quarter of the students surveyed were in their second year of study (27.1%, n
38
39 169 = 105). (Table 1) Respondents were asked 'What do you think is the matter' with the character in
40
41 170 the vignette. Responses were coded as 'Schizophrenic' in the presence of the words
42
43 171 'schizophrenic/schizophrenia'. Other responses were categorized based on similarity of thematic
44
45 172 content. The most common alternative label for Schizophrenia was Emotional problem (24.7%,
46
47 173 $n=96$). Schizophrenia was also mislabeled as Depression (11.6%, $n = 45$). More than a tenth of the
48
49 174 respondents used stigmatizing labels such as 'Crazy' and 'Mad' (11.1%, 43). One in eight
50
51 175 respondents (12.1%, $n = 47$) correctly identified and labelled the Schizophrenia vignette. (Table
52
53 176 2)

54
55 177 For the Schizophrenia vignette, respondents were asked to note what parts of the vignette gave
56
57 178 them the strongest hints of emotional distress for the character. Hallucination was the most

179 identified symptom of distress for schizophrenia (47.9%, n = 186) while Personal neglect was the
180 least identified symptom (14.9%, n = 58). Results of which symptoms were reported in the
181 'schizophrenia' vignette are listed in Table 3. Respondents were asked to recommend a source of
182 help for the character in the vignette. The 'Counsellor' category included the mention of the terms
183 'counsellor', 'counseling' and 'church counselor'. 'Friend', 'classmate' and 'roommate' were
184 combined into the 'Friends' category. The 'Family' category included the responses of 'family',
185 'parents', 'Elders' and 'siblings/brother/sister'. The use of the more specific terms 'Psychologist'
186 or 'Psychiatrist' were afforded their own categories. Respondents identified Psychiatrist as the
187 most common source of help they thought was required for the schizophrenia vignette (36.3%, n
188 = 141). About a fifth of the sample population recommended a Psychologist (20.4%, n = 79).
189 Table 4. A higher proportion of males (14.7%) than females (10.7%) correctly identified and
190 labelled the schizophrenia vignette ($X^2= 1.322$, $p = 0.162$). A higher proportion of females (37.3%)
191 recommended a psychiatrist for the schizophrenia vignette than males, ($X^2 = 0.287$, $p= 0.336$)
192 Respondents between 25-30 years (39.6%, n = 21) had the greatest proportion of respondents who
193 correctly identified and labelled schizophrenia. Students of the Faculty of Pharmaceutical sciences
194 also had the greatest proportion of respondents who correctly identified and labeled the
195 schizophrenia vignette (28.8%, n = 34). There was a strong association between faculty of study
196 and ability to correctly identify and label the schizophrenia vignette ($X^2 = 44.557$, $p = 0.000$). The
197 faculty of Agricultural sciences had the greatest proportion of respondents who used stigmatizing
198 labels for the schizophrenia vignette (21%, n=17). There was a strong association between faculty
199 of study and use of stigmatizing label for the schizophrenia vignette ($X^2 = 13.676$, $p = 0.001$).
200 There was a strong association between faculty of study and recommending a Psychiatrist for the
201 schizophrenia vignette ($X^2 = 25.161$, $p = 0.000$). (Table 5) There was a strong association between
202 Study level and ability to correctly identify and label the schizophrenia vignette ($X^2= 33.175$, $p =$
203 0.000). Age of respondents had no significant association with their mental health literacy.

204 Discussion

205 The use of a vignette-based questionnaire was employed in this study, which allowed respondents
206 to express their own thoughts and beliefs, rather than to select answers from a pool. Vignettes are
207 simulation of real life events and have been used to investigate different phenomena in the social,
208 behavioral and health sciences²¹⁻²³. Although the use of vignettes is fraught with difficulties in

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2
3 209 establishing reliability and validity, it overcomes most of the problems associated with observation
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5 210 and traditional questionnaire studies such as the Hawthorne effect and ethical dilemmas²⁴. They
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7 211 have been found to provide a valuable approach that is acceptable to participants and elicits
8
9 212 important insight on participant experience and opinions.²⁵ The response rate of the study was high
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11 213 and comparable to response rates obtained from studies carried out among University students.^{26,27}
12
13 214 There were more female respondents than male respondents which corresponds with findings from
14
15 215 a similar study carried out among university students in Malaysia.²⁸ Research among
16
17 216 undergraduate students has shown that response rates vary by gender with females being more
18
19 217 likely to respond than males.^{29,30} Most of the respondents fell within the age 18 and 24 years and
20
21 218 were in their second year of study. This is in line with the 6-3-3-4 system of education obtainable
22
23 219 in Nigeria where the minimum age of entry into public universities is pegged at 16 years. The 6-
24
25 220 3-3-4 system was introduced in 1987 following the introduction of the National Policy on
26
27 221 Education.³¹ This was introduced to bring uniformity to the structure of education throughout the
28
29 222 country.

30
31 223 About one in eight (12.1%) of the University students surveyed could correctly identify and label
32
33 224 the Schizophrenia vignette. This proportion of university students is much lower than the 60
34
35 225 percent of University students who correctly identified and labeled a schizophrenia vignette in a
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37 226 study carried out in Singapore.³² This may be because the Singaporean study was restricted to
38
39 227 medical students only. Even though many respondents were unable to recognize the problem as
40
41 228 schizophrenia, some of respondents (24.7%) did identify that the character's problem was a mental
42
43 229 illness. While some researchers insist that accurate labelling of the disorder is essential for
44
45 230 appropriate help seeking,³³⁻³⁵ others argue that accurate 'diagnosis' by laypeople may not
46
47 231 necessary as long as there is recognition of the presence of a mental health problem that warrant
48
49 232 help-seeking from mental health professionals.³⁶

50
51 233 Ironically, some of the respondents (11.6%) thought the character in the schizophrenia vignette
52
53 234 was depressed. More than a tenth of the respondents used stigmatizing labels such "Crazy", "Mad"
54
55 235 and "Insane". Similar findings have also been reported among secondary school children in
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57 236 Nigeria and other parts of the world³⁷⁻⁴⁰. Stigma towards mental illness stems from the traditional
58
59 237 concept of danger and incompetence, which is even more evident in the case of major psychiatric
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238 illnesses such as schizophrenia.^{40,41} Five respondents reported that the vignette was a drug addict

239 despite the fact that the vignette clearly noted that the character was not on drugs. Whether or not
240 drug abuse is a causative factor in the etiology of schizophrenia has long been debated, and the
241 relationship between psychostimulant use and psychotic symptoms has been well documented over
242 the years. Cannabis intoxication is well known to precipitate acute psychotic episodes and to
243 worsen symptoms of existing psychotic illness,^{42,43} but controversy still surrounds the notion that
244 cannabis misuse could result in a prolonged schizophrenic illness.

245 Hallucination was the most frequently recognized symptom of schizophrenia by the respondents.
246 Hallucinations have been defined by the Diagnostic and Statistical Manual of Mental Disorders
247 fifth edition (DSM-5) as: “perception-like experiences that occur without an external stimulus.
248 They are vivid and clear, with the full force and impact of normal perceptions, and not under
249 voluntary control. [43] Hallucinations have been described in various clinical populations, but they
250 are neither disorder nor disease specific. They are also frequent in non-clinical populations,⁴⁴ and
251 an important interest has been developed for voice-hearing in the general population. In
252 schizophrenic patients, hallucinations can be observed in any of the sensory modalities. In 59% of
253 the cases they are auditory in nature, and in 27% of those cases visual hallucinations are also
254 experienced at some point.⁴⁵ About one third of the respondents recommended the help of a
255 psychiatrist while one fifth of them recommended the help of a psychologist. Thirteen respondents
256 referred the vignette character to a rehab facility since they were convinced that the character was
257 a drug addict.

258 The faculty of Pharmaceutical sciences had the greatest proportion of students who correctly
259 recognized and identified the schizophrenia vignette. The highest number of respondents who
260 recommended a psychiatrist for the schizophrenia vignette were from the faculty of
261 Pharmaceutical sciences. This finding is particularly of interest since student pharmacists are
262 future health care professionals. It is particularly important for pharmacists who provide
263 information not only to patients but also to their families and the general population to be well
264 informed and aware of the role stigma plays as an obstacle to improving mental health care and
265 quality of life for people with psychopathology (such as schizophrenia). This is essential in the
266 context of the efforts that must be made to reduce the enormous treatment gap for mental disorders
267 by increasing the identification and appropriate referrals in community pharmacy settings. The
268 ability to correctly recognize and identify schizophrenia increased with increasing level of study.

269 This is expected as increasing study level corresponds to increasing age and exposure and possible
270 psychological challenges in the university. This association was statistically significant.

271 The strength of this study lies in the fact that a vignette-based questionnaire which allows
272 respondents to articulate their own thoughts was used. Although the present study might make
273 useful contributions to the literature on mental health literacy of university students, there are a
274 number of limitations that should be mentioned. This research has relied on the use of brief written
275 case vignettes. The extent to which such data can be translated into what actually is likely to happen
276 in the real world is unclear. Secondly, students were recruited in just one university; it would be
277 desirable to include students from different universities as ethnicity, socio-economic status and
278 cultural beliefs have been shown to affect mental health literacy. Furthermore, the study sample
279 may not be representative of the study population since they were conveniently sampled. .

280 **Conclusion**

281 Mental health literacy among University of Nigeria Students was poor. About one in eight
282 university students surveyed could identify and label the schizophrenia vignette. Hallucination was
283 the most recognized symptom of schizophrenia. Psychiatrists were the most recommended source
284 of help for schizophrenia. Faculty of study and Study level were associated with parameters of
285 mental health literacy. In light of the findings of this study, further studies should be carried out in
286 other Nigerian universities to investigate their mental health literacy to ensure generalizability of
287 our findings. Furthermore, research on culturally sensitive interventions to improve mental health
288 literacy should be embarked on.

289 **Contributors**

290 MJO was the project leader, DOA was responsible for the project design. VUO made conceptual
291 contributions. DOA wrote the manuscript and all authors read and revised the manuscript.

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294 or not-for-profit sectors.

295 **Competing interests**

296 None declared

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3 297 Patient consent

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5 298 Obtained.

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8 299 Ethics approval: Ethical clearance for the study was gotten from the University of Nigeria Ethical
9
10 300 committee

11
12 301 Data sharing statement: Readers who wish to gain access to the data can write to the corresponding
13
14 302 author at aluhdeborah@yahoo.com

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Table 1: Socio-demographic Characteristics of the Respondents

Characteristics	Frequency n = 388	Percentage (%)
Gender		
Male	136	35.1
Female	252	64.9
Age (years)		
< 18	38	9.8
18-24	294	75.8
25-30	53	13.7
>30	3	0.8
Faculty		
Agricultural Sciences (N = 3954)	189	48.7
Arts (N = 4650)	81	20.9
Pharmaceutical Sciences (N = 3175)	118	30.4
Study Level†		
100	78	20.1
200	105	27.1
300	100	25.8
400	70	18.0
500	35	9.0

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3 438 †Study level- Academic level of study of students
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6 439 **Table 2: Recognition of the case vignette of Schizophrenia by the respondents**
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Variable	Frequency	Percentage
Alternative labels		
Negative Emotion†	48	12.4
Spiritual issues‡	16	4.1
Crazy/Mad	43	11.1
Depression	45	11.6
On drugs	5	1.3
Mentally ill	96	24.7
Correct label		
Schizophrenia	47	12.1

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26 440 † ‘Emotional problem’, ‘Emotional issue’, ‘Mood swing’
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28 441 ‡ ‘Possessed’, ‘Spiritual problem’, ‘Demon’ ‘Evil spirit’, ‘Spiritual issue’
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463 **Table 3: Identified symptoms for Schizophrenia vignette**

Item	Frequency	Percentage
Hallucination	186	47.9
Social withdrawal	155	40.4
Personal neglect	58	14.9
Paranoia	90	23.2

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Table 4: Recommended Sources of help for the schizophrenia vignette

Variable	Frequency	Percentage
Psychiatrist	141	36.3
Friends	8	2.1
Counsellor	41	10.6
God	38	9.8
Psychologist	79	20.4
Physician	56	14.4

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Parents	13	3.4
Rehab	13	3.4

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47 **Table 5: Association between Respondents' characteristics and parameters of mental health**
48 **Literacy**
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Variable	Total N = 389		Faculty		X ²	P-value
		†Pharm.	‡Agric.	Arts		

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Label	n (%)	n (%)	n (%)	n (%)			
Schizophrenia	47 (12.1)	34 (28.8)	3 (3.7)	10 (5.3)	44.557	0.000*	
Crazy/Mad	43 (11.1)	5 (4.2)	17 (21.0)	21 (11.1)	13.676	0.001*	
Source of help							
Psychiatrist	141 (36.3)	60 (50.8)	13 (16.0)	68 (36.0)	25.161	0.000*	
Friends	7 (1.8)	4 (3.4)	0(0)	3(1.6)	4.265	0.371	
Family	20 (5.2)	6 (5.1)	6 (7.4)	8 (4.2)	1.171	0.557	
		Study Level					
		1 st year	2 nd Year	3 rd Year	Final year		
Label							
Schizophrenia	47 (12.1)	3 (3.8)	1 (1.0)	12 (12.0)	31(29.5)	47.191	0.000*
Crazy/Mad	43 (11.1)	9 (11.5)	10 (9.5)	10 (10.0)	14 (13.3)	0.806	0.848
Source of help							
Counsellor	99 (25.5)	19 (24.4)	33 (24.4)	27 (27.0)	20 (19.0)	4.414	0.220
Psychiatrist	141 (36.3)	16 (20.5)	30 (28.6)	36 (36.0)	59 (56.2)	29.075	0.000*

*Statistical significance at $p < 0.05$, †Pharmaceutical Sciences, ‡Agricultural Sciences

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6 Being a good friend involves knowing when our friends are upset. Would you know when your
7 friends are going through a really hard time? Or, would you know when or where your friends
8 should get help about their problems? This questionnaire contains a brief description of two young
9 people. Your job is to read each description and then decide whether you think that this person has
10 a serious problem, and if so, what they should do about it. There are **NO RIGHT OR WRONG**
11 **ANSWERS**—we just want to get some different points of view. The questionnaire is completely
12 **ANONYMOUS**
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15 Gender: Male [] Female []

16 Department _____

17 Level: 100 [] 200 [] 300 [] 400 [] 500 []

18 Age: Less than 18 years [] 18-24 [] 25-30 [] Greater than 30 [] Greater than 18 []

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21 Obinna is a 20 year old 300 level student. For the past few months, Obinna has stopped seeing his
22 friends and no longer goes to school. He locks himself in his room and does not want to talk to his
23 family. He refuses to take his bath. His parents also hear him walking around his bedroom at night
24 when everyone is sleeping. Even though they know he is alone, they have heard him talking,
25 shouting and arguing as if someone else is there with him in the room. When they try to encourage
26 him to come out, he says he won't leave home because the neighbor is spying on him. They know
27 he is not taking drugs because he never sees anyone or goes anywhere.
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34 In **FIVE WORDS OR LESS**, what do you think is wrong with Obinna?
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37 Which parts of Obinna's story are the strongest hints to you that he might be experiencing
38 Emotional difficulties? (Please quote the words from the scenarios that are the strongest
39 hints.) _____
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44 Where should he go to for help? _____
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3 STROBE Statement—Checklist of items that should be included in reports of cross-sectional
4 studies
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6 Title and abstract – Pg 1 Line 1, Page 2 Line 36
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8 **Introduction**

9

10 Background/rationale – Pg 3 Line 71 - 113
11

12 Objectives – Pg 4 Line 114-115
13

14 **Methods**

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16 Study design – Pg 4 & 5 Line 120-123
17

18 Setting –Pg 4 & 5 Line 120-123
19

20 Participants – Pg 5 Line 124 -136
21

22 Variables – Pg 5 Line 143 -144
23

24 Data sources/Measurement: Pg 5 Line 138-144
25

26 Bias: Pg 4 Line 134-136
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28 Study size; Pg 4 Line 131
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30 Quantitative variables: Pg 5&6 Line 148-150
31

32 Statistical methods: Pg 5 & 6 Line 147-154
33

34 **Results**

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36 Participants: Pg 6 Line 164-165
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38 Descriptive data: Pg 6 Line 165-168
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40 Outcome data: Pg 6 Line 164-165
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42 Main results: Not Applicable
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44 Other analyses: Pg 7 Line 194-202
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46 **Discussion**

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48 Key results: Pg 8 & 9 Line 222, 244 & 253
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50 Limitations: Pg 10 Line 273-280
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52 Interpretation: Pg 10 Line 280-287
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54 Generalisability: Pg 10 Line 284-286
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56 Funding: Pg 10 Line 292-293
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BMJ Open

A cross-sectional survey of mental health literacy among undergraduate students of University of Nigeria

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Keywords:	Mental health literacy, Knowledge, schizophrenia, students, Nigeria, help-seeking

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2
3 1 **Title: A cross-sectional survey of mental health literacy among undergraduate students of**
4
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26 21 Word count: 4933

27 22 Acknowledgements: Nil

28 23 Running title: Mental health literacy of students

24 **Abstract**

25 Objective: This study sought to assess knowledge of schizophrenia and help-seeking behavior
26 among undergraduate students of a Nigerian university. Socio-demographic predictors of correct
27 recognition were also explored.

28 Design: The study was a cross-sectional descriptive survey.

29 Setting: The study was carried out in University of Nigeria, a premiere university located in South-
30 eastern Nigeria.

31 Participants: Undergraduate students of the University of Nigeria.

32 Methods: All consenting male and female students of three purposively selected faculties were
33 recruited for the study. Self-administered vignette-based questionnaires were distributed to
34 students of the selected faculties between September and November 2018. Data were analyzed
35 using the IBM Statistical Product and Services Solution (SPSS) for Windows, Version 21.0 (IBM
36 Corp, Version 20.0, and Armonk, NY, USA)

37 Results: Out of the 400 questionnaires that were distributed, 389 were completed and returned
38 (97.3% response rate). Respondents were mainly female (64.9%, n = 252) and were within the
39 ages of 18 and 24 years (75.8%, n = 294). One in eight respondents (12.1%, n = 47) correctly
40 identified and labelled the schizophrenia vignette. Hallucination was the most identified symptom
41 of distress for schizophrenia (47.9%, n = 186). The most common alternative label for
42 schizophrenia was 'Mental illness' (24.7%, n=96). Schizophrenia was also mislabeled as
43 Depression (11.6%, n = 45). More than a tenth of the respondents used stigmatizing labels such as
44 'Crazy' and 'Mad' (11.1%, 43). Psychiatrists were the most recommended source of help for the
45 vignette character (36.3%, n = 141). There was a strong association between faculty of study and
46 ability to correctly identify and label the schizophrenia vignette ($X^2 = 44.557$, $p < 0.001$).

47 Conclusion: Mental health literacy among students of University of Nigeria was poor. Research
48 on culturally sensitive interventions to improve mental health literacy should be embarked on.

49 Keywords: Mental health literacy, Knowledge, schizophrenia, students, Nigeria,

50

51 **Strengths and Limitations of this study**

- 52 • A vignette-based questionnaire which allowed respondents to articulate their own thoughts
53 was used.
- 54 • This study is the first of its kind to be carried out among undergraduate students in Nigeria.
- 55 • The study had a high response rate.
- 56 • Students were recruited in just one university which limits generalizability of the findings.
57 The extent to which responses based on brief written case vignettes can be translated into
58 what actually is likely to happen in the real world is unclear

59 **Background**

60 Mental disorders are the fourth leading cause of disability in people aged 15-44 years.¹The Global
61 Economic Burden of Non-communicable Diseases report showed mental disorders to be the largest
62 cost driver, equating to \$2.5 trillion in global costs in 2010; the costs of mental disorders were
63 found to be higher than the costs of diabetes, respiratory disorders and cancer combined.² Both
64 the general public and the mentally ill have been found to have stigmatizing attitudes towards
65 psychiatric illnesses.³ Hayward and Bright have defined stigma associated with mental disorders
66 as “the negative effects of a label placed on any group, such as a racial or religious minority, or,
67 in this case, those who have been diagnosed as mentally ill”.³ Popular misconceptions about
68 mentally ill people include; being dangerous, weak and socially incompetent³

69 The increasing burden of mental disorders has been accompanied by worldwide efforts to educate
70 and increase awareness among the general public about mental illness. These efforts are important
71 as the general public is not well informed about mental illness and this lack of information has
72 been linked with negative attitudes towards persons with mental illness and stigmatization.⁴ Stigma
73 has also been defined as social devaluation of a person due to an attribute that is deeply
74 discrediting⁵.Stigmatization impacts upon persons suffering from mental illness, making them less
75 likely to seek help from relevant mental health professionals. A worrisome public health problem
76 partly related to stigmatization is the presence of a huge treatment gap for treatable psychiatric
77 disorders.⁶ In spite of the availability of effective treatment for schizophrenia, a huge treatment
78 gap persists especially in low and middle income countries (LMIC) where less than one in ten

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3 79 affected individuals receive treatment.⁷ Despite increased knowledge and improving attitudes in
4
5 80 more developed nations, low- and middle-income countries still lag far behind.^{8,9} Studies across
6
7 81 different countries have shown that developing countries have a greater belief that the etiology of
8
9 82 schizophrenia is based on sociological rather than biological factors and generally, have less
10
11 83 knowledge about the disorder.^{10,11} Also, it has been found that individuals from developing
12
13 84 countries are less likely to seek professional help for mental illness than individuals from more
14
15 85 developed countries.¹² Evidence from High-income countries has shown that social contact
16
17 86 between people with and without experience of mental illness¹³ and educational interventions⁶ are
18
19 87 the most effective interventions for reducing stigmatization in adults and young people
20
21 88 respectively. There is paucity of evidence on which interventions are effective and feasible in
22
23 89 LMIC's¹⁴.

24
25 90 Jorm *et al.*, have defined Mental Health Literacy as the knowledge and beliefs about mental
26
27 91 disorders which aid their recognition, management or prevention.⁵ The concept of mental health
28
29 92 literacy suggests that it is important for knowledge about mental health aspects and mental
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31 93 disorders to increase since it is a prerequisite for early recognition and seeking treatment.¹⁵ Mental
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33 94 health literacy and social rejection studies are particularly important as they suggest that inaccurate
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35 95 recognition and false beliefs about schizophrenia raise social distance toward those suffering from
36
37 96 this disorder.⁴ Mental health literacy is especially important among university students as research
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39 97 has shown that about one-third of university students suffer from a diagnosable mental disorder,
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41 98 and 64% of individuals who dropped out of college did so because of a mental disorder.¹⁶⁻
42
43 99 ¹⁸Although 75% of lifetime disorders have their onset during college years,¹⁸⁻²⁰ studies have also
44
45 100 shown that college students cannot effectively recognize their own mental illness or symptoms.¹⁹
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47 101 Also, attitudes towards disease are often cemented during this formative time of development.

48
49 102 This study sought to assess mental health literacy of undergraduate students in terms of their ability
50
51 103 to correctly label schizophrenia, recognize symptoms and their preferred source of help. Most
52
53 104 studies on mental health literacy among young people in Nigeria have been among Secondary
54
55 105 school students. This study is the first of its kind to be carried out among undergraduate students
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57 106 in Nigeria.

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109 **Research methods and design**

110 **Study design and setting**

111 This study used a cross-sectional descriptive approach and was carried out among undergraduate
112 students of University of Nigeria, Nsukka. University of Nigeria is one of the premiere universities
113 in Nigeria created in 1970 and boasts of having students with diverse ethnicities.

114 **Study population and sampling strategy**

115 Three out of fifteen faculties comprising one medically-related and two non-medically related
116 faculties were purposively selected for the study. The faculties were selected because they had the
117 most number of students (11,779 students representing almost half of the total student population)
118 and also had a more even gender distribution compared to the other faculties. Given that a total
119 28047 students were enrolled in the university as at September 2018, on the basis of the most
120 conservative response distribution of 50%, allowing 0.5% margin of error at 95% confidence
121 interval, the minimum sample size for the entire undergraduate student population was calculated
122 to be 379. A total of 400 students were recruited for the study. Collection of data from the students
123 of the three faculties was done using convenience sampling method between September and
124 November, 2018. The questionnaires were distributed to all consenting students who were present
125 in their faculty lecture theatres during the study period. In a covering letter accompanying the
126 survey instrument, respondents were informed of the purpose of the survey and assured of
127 confidentiality and anonymity.

128 **Data Collection and Instrument**

129 The participants were presented with a vignette-based questionnaire. An already established
130 vignette, first developed by Jorm *et al.*, was adapted and utilized to fit this study's aims.⁵The name
131 in the vignette was substituted with an indigenous name in the study setting and the character was
132 presented as a university student. The vignette detailed a student who satisfied the symptomatology
133 of schizophrenia according to the Diagnostic and Statistical Manual of Mental Disorders, 4th
134 Edition (DSM-IV).²⁰ The vignette was followed by open-ended questions designed to elicit the
135 participants' recognition of schizophrenia and their recommended source of help. A copy of the
136 questionnaire is included as a supplementary material.

137 **Data analysis**

138 Data were analyzed using the IBM Statistical Product and Services Solution (SPSS) for Windows,
139 Version 21.0 (IBM Corp, Version 20.0, and Armonk, NY, USA). Descriptive statistics such as
140 frequencies and percentages were computed for relevant socio-demographic characteristics,
141 knowledge of schizophrenia, and recommended sources of help. Chi-Square tests were performed
142 to find associations between independent and the dependent variables with significance set at
143 <0.05. The open ended responses were grouped based on similarity of thematic content using a
144 deductive approach. The principal researcher developed the interpretation of the themes generated
145 and final interpretations were accepted by consensus of all the authors. Data were presented as
146 frequencies/percentages.

147 **Ethical considerations**

148 Ethical clearance for the study was gotten from the University of Nigeria Ethical committee. A
149 verbal consent was obtained from the participants and they were assured of the confidentiality of
150 the information that they would give.

151 **Patient/Public involvement**

152 No respondents were involved in defining the research question or the outcome measures, nor were
153 they involved in the design and implementation of the study. There are no plans to involve
154 respondents in the dissemination of the results.

155 **1.3 Results**

156 Out of the 400 questionnaires that were distributed, 389 were completed and returned (97.3%
157 response rate). Respondents were mainly female (64.9%, n = 252) within the age of 18 and 24
158 years (75.8%, n = 294). The faculty of Agricultural sciences had the most respondents (48.7%, n
159 = 187). More than a quarter of the students surveyed were in their second year of study (27.1%, n
160 = 105). (Table 1) Respondents were asked 'What do you think is the matter' with the character in
161 the vignette. Responses were coded as 'Schizophrenia' in the presence of the words
162 'schizophrenic/schizophrenia'. Other responses were categorized based on similarity of thematic
163 content. The most common alternative label for schizophrenia was 'Mental illness' (24.7%,
164 n=96). Schizophrenia was also mislabeled as Depression (11.6%, n = 45). More than a tenth of the

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3 165 respondents used stigmatizing labels such as ‘Crazy’ and ‘Mad’ (11.1%, 43). One in eight
4 166 respondents (12.1%, n = 47) correctly identified and labelled the schizophrenia vignette. (Table 2)
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7 167 For the schizophrenia vignette, respondents were asked to note what parts of the vignette gave
8 168 them the strongest hints of emotional distress for the character. Hallucination was the most
9 169 identified symptom of distress for schizophrenia (47.9%, n = 186) while personal neglect was the
10 170 least identified symptom (14.9%, n = 58). Results of which symptoms were reported in the
11 171 ‘schizophrenia’ vignette are listed in Table 3. Respondents were asked to recommend a source of
12 172 help for the character in the vignette. The ‘Counsellor’ category included the mention of the terms
13 173 ‘counsellor’, ‘counseling’ and ‘church counselor’. ‘Friend’, ‘classmate’ and ‘roommate’ were
14 174 combined into the ‘Friends’ category. The ‘Family’ category included the responses of ‘family’,
15 175 ‘parents’, ‘Elders’ and ‘siblings/brother/sister’. The use of the more specific terms ‘Psychologist’
16 176 or ‘Psychiatrist’ were afforded their own categories. Respondents identified Psychiatrist as the
17 177 most common source of help they thought was required for the vignette character (36.3%, n =
18 178 141). About a fifth of the sample population recommended a Psychologist (20.4%, n = 79). Table
19 179 4. A higher proportion of males (14.7%) than females (10.7%) correctly identified and labelled the
20 180 schizophrenia vignette ($X^2 = 1.322$, $p = 0.162$). A higher proportion of females (37.3%)
21 181 recommended a psychiatrist for the vignette character, ($X^2 = 0.287$, $p = 0.336$). Respondents
22 182 between 25-30 years (39.6%, n = 21) had the greatest proportion of respondents who correctly
23 183 identified and labelled schizophrenia. Students of the Faculty of Pharmaceutical sciences also had
24 184 the greatest proportion of respondents who correctly identified and labeled the schizophrenia
25 185 vignette (28.8%, n = 34). There was a strong association between faculty of study and ability to
26 186 correctly identify and label the schizophrenia vignette ($X^2 = 44.557$, $p < 0.001$). The faculty of
27 187 Agricultural sciences had the greatest proportion of respondents who used stigmatizing labels for
28 188 the schizophrenia vignette (21%, n=17). There was a strong association between faculty of study
29 189 and use of stigmatizing label for the schizophrenia vignette ($X^2 = 13.676$, $p = 0.001$). There was a
30 190 strong association between faculty of study and recommending a Psychiatrist for the schizophrenia
31 191 vignette ($X^2 = 25.161$, $p < 0.001$). (Table 5) There was a strong association between Study level and
32 192 ability to correctly identify and label the schizophrenia vignette ($X^2 = 33.175$, $p < 0.001$). Age of
33 193 respondents had no significant association with their mental health literacy.
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195 Discussion

196 The use of a vignette-based questionnaire was employed in this study, which allowed respondents
197 to express their own thoughts and beliefs, rather than to select answers from a pool of options.
198 Vignettes are simulation of real life events and have been used to investigate different phenomena
199 in the social, behavioral and health sciences^{21–23}. Although the use of vignettes is fraught with
200 difficulties in establishing reliability and validity, it overcomes most of the problems associated
201 with observation and traditional questionnaire studies such as the Hawthorne effect and ethical
202 dilemmas²⁴. They have been found to provide a valuable approach that is acceptable to participants
203 and elicits important insight on participant experience and opinions.²⁵ The response rate of the
204 study was high and comparable to response rates obtained from studies carried out among
205 university students.^{26,27} There were more female than male respondents which corresponds with
206 findings from a similar study carried out among university students in Malaysia.²⁸ Research
207 among undergraduate students has shown that response rates vary by gender with females being
208 more likely to respond than males.^{29,30} Most of the respondents fell within the ages of 18 and 24
209 years and were in their second year of study. This is in line with the 6-3-3-4 system of education
210 obtainable in Nigeria where the minimum age of entry into public universities is pegged at 16
211 years. The 6-3-3-4 system was introduced in 1987 following the introduction of the National Policy
212 on Education.³¹ This was introduced to bring uniformity to the structure of education throughout
213 the country.

214 About one in eight (12.1%) of the University students surveyed could correctly identify and label
215 the Schizophrenia vignette. This proportion of university students is much lower than the 60
216 percent of university students who correctly identified and labeled a schizophrenia vignette in a
217 study carried out in Singapore.³² This may be because the Singaporean study was restricted to
218 medical students only. Even though many respondents were unable to recognize the problem as
219 schizophrenia, some of respondents (24.7%) did identify that the character's problem was a mental
220 illness. About a tenth of the respondents reported that the vignette character had 'Emotional
221 problems'. This label may have been induced by the wordings of the questionnaire which
222 demanded respondents to state what parts of the vignette gave strongest hints of emotional
223 difficulties. While some researchers insist that accurate labelling of the disorder is essential for
224 appropriate help seeking,^{33–35} others argue that accurate 'diagnosis' by laypeople may not

225 necessary as long as there is recognition of the presence of a mental health problem that warrants
226 help-seeking from mental health professionals.³⁶

227 Ironically, some of the respondents (11.6%) thought the character in the vignette was depressed.
228 More than a tenth of the respondents used stigmatizing labels such “Crazy”, “Mad” and “Insane”.
229 Similar findings have also been reported among secondary school children in Nigeria and other
230 parts of the world^{37–40}. Stigma towards mental illness stems from the traditional concept of danger
231 and incompetence, which is even more evident in the cases of major psychiatric illnesses such as
232 schizophrenia.^{40,41} Five respondents reported that the vignette was a drug addict despite the fact
233 that the vignette clearly noted that the character was not on any drugs. Whether or not drug abuse
234 is a causative factor in the etiology of schizophrenia has long been debated, and the relationship
235 between psychostimulant use and psychotic symptoms has been well documented over the years.
236 Cannabis intoxication is well known to precipitate acute psychotic episodes and to worsen
237 symptoms of existing psychotic illness,^{42,43} but controversy still surrounds the notion that cannabis
238 misuse could result in a prolonged schizophrenic illness.

239 Hallucination was the most frequently recognized symptom of schizophrenia by the respondents.
240 Hallucinations have been defined by the Diagnostic and Statistical Manual of Mental Disorders
241 fifth edition (DSM-5) as “perception-like experiences that occur without an external stimulus”.
242 They are vivid and clear, with the full force and impact of normal perceptions, and not under
243 voluntary control. Hallucinations have been described in various clinical populations, but they are
244 neither disorder nor disease specific. They are also frequent in non-clinical populations,⁴⁴ and an
245 important interest has been developed for voice-hearing in the general population. In schizophrenic
246 patients, hallucinations can be observed in any of the sensory modalities. In 59% of the cases they
247 are auditory in nature, and in 27% of those cases, visual hallucinations are also experienced at
248 some point.⁴⁵ About one third of the respondents recommended the help of a psychiatrist while
249 one fifth of them recommended the help of a psychologist. Thirteen respondents referred the
250 vignette character to a rehab facility since they were convinced that the character was a drug addict.

251 The faculty of Pharmaceutical sciences had the greatest proportion of students who correctly
252 recognized and identified the schizophrenia vignette. The highest number of respondents who
253 recommended a psychiatrist for the schizophrenia vignette were also from the faculty of
254 Pharmaceutical sciences. This finding is particularly of interest since student pharmacists are

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3 255 future health care professionals. It is particularly important for pharmacists who provide
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5 256 information not only to patients but also to their families and the general population to be well
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7 257 informed and aware of the role stigma plays as an obstacle to improving mental health care and
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9 258 quality of life for people with psychopathology (such as schizophrenia). This is essential in the
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11 259 context of the efforts that must be made to reduce the enormous treatment gap for mental disorders
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13 260 by increasing the identification and appropriate referrals in community pharmacy settings. The
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15 261 ability to correctly recognize and identify schizophrenia increased with increasing level of study.
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17 262 This is expected as increasing study level corresponds to increasing age and exposure and possible
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19 263 psychological challenges in the university. This association was statistically significant.

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21 264 The strength of this study lies in the fact that a vignette-based questionnaire which allows
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23 265 respondents to articulate their own thoughts was used. Although the present study might make
24
25 266 useful contributions to the literature on mental health literacy of university students, there are a
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27 267 number of limitations that should be mentioned. This research has relied on the use of brief written
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29 268 case vignettes. The extent to which such data can be translated into what actually is likely to happen
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31 269 in the real world is unclear. Secondly, students were recruited in just one university; it would be
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33 270 desirable to include students from different universities as ethnicity, socio-economic status and
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35 271 cultural beliefs have been shown to affect mental health literacy. Furthermore, the study sample
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37 272 may not be representative of the study population since they were conveniently sampled. .

35 273 **Conclusion**

37 274 Mental health literacy among University of Nigeria Students was poor. About one in eight
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39 275 university students surveyed could identify and label the schizophrenia vignette. Hallucination was
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41 276 the most recognized symptom of schizophrenia. Psychiatrists were the most recommended source
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43 277 of help for schizophrenia. Faculty of study and Study level were associated with parameters of
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45 278 mental health literacy. In light of the findings of this study, further studies should be carried out in
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47 279 other Nigerian universities to investigate their mental health literacy to ensure generalizability of
48
49 280 our findings. Furthermore, research on culturally sensitive interventions to improve mental health
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51 281 literacy should be embarked on.

52 282 **Contributors**

54 283 MJO was the project leader, DOA was responsible for the project design. VUO made conceptual
55
56 284 contributions. DOA wrote the manuscript and all authors read and revised the manuscript.

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288 Competing interests

289 None declared

290 Patient consent

291 Obtained.

292 Ethics approval: Ethical clearance for the study was gotten from the University of Nigeria Ethical
293 committee

294 Data sharing statement: Readers who wish to gain access to the data can write to the corresponding
295 author at aluhdeborah@yahoo.com

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419 **Table 1: Socio-demographic Characteristics of the Respondents**

Characteristics	Frequency	Percentage
	n = 388	(%)
Gender		
Male	136	35.1
Female	252	64.9
Age (years)		
< 18	38	9.8
18-24	294	75.8
25-30	53	13.7
>30	3	0.8
Faculty		
Agricultural Sciences (N = 3954)	189	48.7
Arts (N = 4650)	81	20.9
Pharmaceutical Sciences (N = 3175)	118	30.4
Study Level†		
100	78	20.1
200	105	27.1
300	100	25.8
400	70	18.0
500	35	9.0

Study level by Faculty	Pharmacy	‡Agric	Arts
	N (%)	N (%)	N (%)
100	1 (0.8)	52 (64.2)	25 (12.7)
200	30 (25.4)	14 (17.3)	65 (33.0)
300	31 (26.3)	8 (9.9)	64 (32.5)
400	24 (20.3)	7 (8.6)	40 (20.3)
500	32 (27.1)	0 (0)	3 (1.5)

420 †Study level- Academic level of study of students ‡Agricultural sciences

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432 **Table 2: Recognition of the case vignette of Schizophrenia by the respondents**

Variable	Frequency	Percentage
Alternative labels		
Negative Emotion†	48	12.4
Spiritual issues‡	16	4.1
Crazy/Mad	43	11.1
Depression	45	11.6
On drugs	5	1.3
Mentally ill	96	24.7
Correct label		
Schizophrenia	47	12.1

433 † ‘Emotional problem’, ‘Emotional issue’. ‘Mood swing’

434 ‡ ‘Possessed’, ‘Spiritual problem’, ‘Demon’ ‘Evil spirit’, ‘Spiritual issue’

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445 **Table 3: Identified symptoms for Schizophrenia vignette**

Item	Frequency	Percentage
Hallucination	186	47.9
Social withdrawal	155	40.4
Personal neglect	58	14.9
Paranoia	90	23.2

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463 **Table 4: Recommended Sources of help for the schizophrenia vignette**

Variable	Frequency	Percentage
Psychiatrist	141	36.3
Friends	8	2.1
Counsellor	41	10.6
God	38	9.8
Psychologist	79	20.4
Physician	56	14.4
Parents	13	3.4
Rehab	13	3.4

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476 **Table 5: Association between Respondents' characteristics and parameters of mental health**
 477 **Literacy**

Variable	Total N = 389	Faculty				X ²	P-value
Label	n (%)	†Pharm. n (%)	‡Agric. n (%)	Arts n (%)			
Schizophrenia	47 (12.1)	34 (28.8)	3 (3.7)	10 (5.3)		44.557	0.000*
Crazy/Mad	43 (11.1)	5 (4.2)	17 (21.0)	21 (11.1)		13.676	0.001*
Source of help							
Psychiatrist	141 (36.3)	60 (50.8)	13 (16.0)	68 (36.0)		25.161	0.000*
Friends	7 (1.8)	4 (3.4)	0(0)	3(1.6)		4.265	0.371
Family	20 (5.2)	6 (5.1)	6 (7.4)	8 (4.2)		1.171	0.557
		Study Level					
		1 st year	2 nd Year	3 rd Year	Final year		
Label							
Schizophrenia	47 (12.1)	3 (3.8)	1 (1.0)	12 (12.0)	31(29.5)	47.191	0.000*
Crazy/Mad	43 (11.1)	9 (11.5)	10 (9.5)	10 (10.0)	14 (13.3)	0.806	0.848
Source of help							
Counsellor	99 (25.5)	19 (24.4)	33 (24.4)	27 (27.0)	20 (19.0)	4.414	0.220
Psychiatrist	141 (36.3)	16 (20.5)	30 (28.6)	36 (36.0)	59 (56.2)	29.075	0.000*

478 *Statistical significance at p<0.05, †Pharmaceutical Sciences, ‡Agricultural Sciences

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6 Being a good friend involves knowing when our friends are upset. Would you know when your
7 friends are going through a really hard time? Or, would you know when or where your friends
8 should get help about their problems? This questionnaire contains a brief description of a student.
9 Your job is to read the description and then decide whether you think that this person has a serious
10 problem, and if so, what they should do about it. There are **NO RIGHT OR WRONG**
11 **ANSWERS**—we just want to get some different points of view. The questionnaire is completely
12 **ANONYMOUS**
13

14
15 Gender: Male [] Female []

16 Faculty _____

17
18 Level: 100 [] 200 [] 300 [] 400 [] 500 []

19
20 Age: Less than 18 years [] 18-24 [] 25-30 [] Greater than 30 []

21
22 Obinna is a 20 year old 300 level student. For the past few months, Obinna has stopped seeing his
23 friends and no longer goes to school. He locks himself in his room and does not want to talk to his
24 family. He refuses to take his bath. His parents also hear him walking around his bedroom at night
25 when everyone is sleeping. Even though they know he is alone, they have heard him talking,
26 shouting and arguing as if someone else is there with him in the room. When they try to encourage
27 him to come out, he says he won't leave home because the neighbor is spying on him. They know
28 he is not taking drugs because he never sees anyone or goes anywhere.
29
30
31

32
33
34 In **FIVE WORDS OR LESS**, what do you think is wrong with Obinna?
35 _____
36

37
38 Which parts of Obinna's story are the strongest hints to you that he might be experiencing
39 Emotional difficulties? (Please quote the words from the scenarios that are the strongest
40 hints.) _____
41 _____
42 _____
43

44 Where should he go to for help? _____
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For peer review only

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3 STROBE Statement—Checklist of items that should be included in reports of cross-sectional
4 studies
5

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7

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9

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29

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35

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37

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39

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41

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43

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55

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57
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A cross-sectional survey of mental health literacy among undergraduate students of University of Nigeria

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3 1 **Title: A cross-sectional survey of mental health literacy among undergraduate students of**
4
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54 23 Running title: Mental health literacy of students

24 Abstract

25 Objective: This study sought to assess knowledge of schizophrenia and help-seeking behavior
26 among undergraduate students of a Nigerian university. Socio-demographic predictors of correct
27 recognition were also explored.

28 Design: The study was a cross-sectional descriptive survey.

29 Setting: The study was carried out in the University of Nigeria, a pioneer university located in
30 South-eastern Nigeria.

31 Participants: Undergraduate students of the University of Nigeria.

32 Methods: All consenting male and female students of three purposively selected faculties were
33 recruited for the study. Self-administered vignette-based questionnaires were distributed to
34 students of the selected faculties between September and November 2018. Data were analyzed
35 using the IBM Statistical Product and Services Solution (SPSS) for Windows, Version 21.0 (IBM
36 Corp, Version 20.0, and Armonk, NY, USA) Results: Out of the 400 questionnaires that were
37 distributed, 389 were completed and returned (97.3% response rate). Respondents were mainly
38 female (64.9%, n = 252) and were within the ages of 18 and 24 years (75.8%, n = 294). One in
39 eight respondents (12.1%, n = 47) correctly identified and labelled the schizophrenia vignette.
40 Hallucination was the most identified symptom of distress for schizophrenia (47.9%, n = 186).
41 The most common alternative label for schizophrenia was 'Mental illness' (24.7%, n=96).
42 Schizophrenia was also mislabeled as Depression (11.6%, n = 45). More than a tenth of the
43 respondents used stigmatizing labels such as 'Crazy' and 'Mad' (11.1%, 43). Psychiatrists were
44 the most recommended source of help for the vignette character (36.3%, n = 141). There was a
45 strong association between faculty of study and ability to correctly identify and label the
46 schizophrenia vignette ($X^2 = 44.557$, $p < 0.001$).

47 Conclusion: Mental health literacy among students of the University of Nigeria was poor.
48 Research on culturally sensitive interventions to improve mental health literacy should be
49 embarked on.

50 Keywords: Mental health literacy, Knowledge, schizophrenia, students, Nigeria,

51

52 Strengths and Limitations of this study

- 53 • A vignette-based questionnaire that allowed respondents to articulate their thoughts was
54 used.
- 55 • This study is the first of its kind to be carried out among undergraduate students in Nigeria.
- 56 • The study had a high response rate.
- 57 • Students were recruited in just one university which limits the generalizability of the
58 findings.

59 The extent to which responses based on brief written case vignettes can be translated into what
60 is likely to happen in the real world is unclear

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75 **Background**

76 Mental disorders are the fourth leading cause of disability in people aged 15-44 years.¹The Global
77 Economic Burden of Non-communicable Diseases report showed mental disorders to be the largest
78 cost driver, equating to \$2.5 trillion in global costs in 2010; the costs of mental disorders were
79 found to be higher than the costs of diabetes, respiratory disorders and cancer combined.² Both
80 the general public and the mentally ill have been found to have stigmatizing attitudes towards
81 psychiatric illnesses.³ Hayward and Bright have defined stigma associated with mental disorders
82 as “the negative effects of a label placed on any group, such as a racial or religious minority, or,
83 in this case, those who have been diagnosed as mentally ill”.³ Popular misconceptions about
84 mentally ill people include; being dangerous, weak and socially incompetent³

85 The increasing burden of mental disorders has been accompanied by worldwide efforts to educate
86 and increase awareness among the general public about mental illness. These efforts are important
87 as the general public is not well informed about mental illness and this lack of information has
88 been linked with negative attitudes towards persons with mental illness and stigmatization.⁴ Stigma
89 has also been defined as the social devaluation of a person due to an attribute that is deeply
90 discrediting⁵.Stigmatization impacts on persons suffering from mental illness, making them less
91 likely to seek help from relevant mental health professionals. A worrisome public health problem
92 partly related to stigmatization is the presence of a huge treatment gap for treatable psychiatric
93 disorders.⁶ In spite of the availability of effective treatment for schizophrenia, a huge treatment
94 gap persists especially in low and middle-income countries where less than one in ten affected
95 individuals receives treatment.⁷ Despite increased knowledge and improving attitudes in more
96 developed nations, low- and middle-income countries still lag far behind.^{8,9}Studies across different
97 countries have shown that developing countries have a greater belief that the etiology of
98 schizophrenia is based on sociological rather than biological factors and generally, have less
99 knowledge about the disorder.^{10,11}Also, it has been found that individuals from developing
100 countries are less likely to seek professional help for mental illness than - individuals from more
101 developed countries.¹² Evidence from High-income countries has shown that social contact
102 between people with and without the experience of mental illness¹³ and educational interventions⁶
103 are the most effective interventions for reducing stigmatization in adults and young people

1
2
3 104 respectively. There is a paucity of evidence on which interventions are effective and feasible in
4
5 105 LMIC's.¹⁴
6

7 106 Jorm et al. have defined Mental Health Literacy as the knowledge and beliefs about mental
8
9 107 disorders which aid their recognition, management or prevention.¹⁵ The concept of mental health
10
11 108 literacy suggests that it is important for knowledge about mental health aspects and mental
12
13 109 disorders to increase since it is a prerequisite for early recognition and seeking treatment.¹⁶ Mental
14
15 110 health literacy and social rejection studies are particularly important as they suggest that inaccurate
16
17 111 recognition and false beliefs about schizophrenia raise social distance toward those suffering from
18
19 112 this disorder.⁴ Mental health literacy is especially important among university students as research
20
21 113 has shown that about one-third of university - students suffer from a diagnosable mental disorder,
22
23 114 and 64% of individuals who dropped out of college did so because of a mental disorder.¹⁷⁻
24
25 115 ¹⁹Although 75% of lifetime disorders have their onset during college years, ¹⁸⁻²⁰ studies have also
26
27 116 shown that college students cannot effectively recognize their mental illness or symptoms.²⁰ Also,
28
29 117 attitudes towards disease are often cemented during this formative time of development.

30
31 118 This study sought to assess the mental health literacy of undergraduate students in terms of their
32
33 119 ability to correctly label schizophrenia, recognize symptoms and their preferred source of help.
34
35 120 Most studies on mental health literacy among young people in Nigeria have been among
36
37 121 Secondary school students. This study is the first of its kind to be carried out among undergraduate
38
39 122 students in Nigeria.

40 123 **Research methods and design**

41 124 **Study design and setting**

42
43 125 This study used a cross-sectional descriptive approach and was carried out among undergraduate
44
45 126 students of the University of Nigeria, Nsukka. The University of Nigeria is one of the pioneer
46
47 127 universities in Nigeria created in 1970 and boasts of having students with diverse ethnicities.

48 128 **Study population and sampling strategy**

49
50
51 129 Three out of fifteen faculties comprising one medically-related and two non-medically related
52
53 130 faculties were purposively selected for the study. The faculties were selected because they had the
54
55 131 most number of students (11,779 students representing almost half of the total student population)

1
2
3 132 and had a more even gender distribution compared to the other faculties. Given that a total 28047
4
5 133 students were enrolled in the university as at September 2018, based on the most conservative
6
7 134 response distribution of 50%, allowing 0.5% margin of error at 95% confidence interval, the
8
9 135 minimum sample size for the entire undergraduate student population was calculated to be 379. A
10
11 136 total of 400 students were recruited for the study. The collection of data from the students of the
12
13 137 three faculties was done using a convenience sampling method between September and November
14
15 138 2018. The questionnaires were distributed to all consenting students who were present in their
16
17 139 faculty lecture theatres during the study period. In a covering letter accompanying the survey
18
19 140 instrument, respondents were informed of the purpose of the survey and assured of confidentiality
20
21 141 and anonymity.

22 142 **Data Collection and Instrument**

23
24 143 The participants were presented with a vignette-based questionnaire. An already established
25
26 144 vignette, first developed by Jorm *et al.*, was adapted and utilized to fit this study's aims.¹⁵The name
27
28 145 in the vignette was substituted with an indigenous name in the study setting and the character was
29
30 146 presented as a university student. The vignette detailed a student who satisfied the symptomatology
31
32 147 of schizophrenia according to the Diagnostic and Statistical Manual of Mental Disorders, 4th
33
34 148 Edition (DSM-IV).²¹ The vignette was followed by open-ended questions designed to elicit the
35
36 149 participants' recognition of schizophrenia and their recommended source of help. A copy of the
37
38 150 questionnaire is included as a supplementary material.

39 151 **Data analysis**

40
41 152 Data were analyzed using the IBM Statistical Product and Services Solution (SPSS) for Windows,
42
43 153 Version 21.0 (IBM Corp, Version 20.0, and Armonk, NY, USA). Descriptive statistics such as
44
45 154 frequencies and percentages were computed for relevant socio-demographic characteristics,
46
47 155 knowledge of schizophrenia, and recommended sources of help. Chi-Square tests were performed
48
49 156 to find associations between independent and the dependent variables with significance set at
50
51 157 <0.05. The open-ended responses were grouped based on the similarity of thematic content using
52
53 158 a deductive approach. The principal researcher developed the interpretation of the themes
54
55 159 generated and final interpretations were accepted by consensus of all the authors. Data were
56
57 160 presented as frequencies/percentages.

161 **Ethical considerations**

162 Ethical clearance for the study was received from the University of Nigeria Ethical committee. A
163 verbal informed consent instead of a written informed consent was obtained to preserve students'
164 desired anonymity. They were also assured of the confidentiality of the information that they
165 would give.

166 **Patient/Public involvement**

167 No respondents were involved in defining the research question or the outcome measures, nor were
168 they involved in the design and implementation of the study. There are no plans to involve
169 respondents in the dissemination of the results.

170 **1.3 Results**

171 Out of the 400 questionnaires that were distributed, 389 were completed and returned (97.3%
172 response rate). Respondents were mainly female (64.9%, n = 252) within the age of 18 and 24
173 years (75.8%, n = 294). The faculty of Agricultural sciences had the most respondents (48.7%, n
174 = 187). More than a quarter of the students surveyed were in their second year of study (27.1%, n
175 = 105). (Table 1) Respondents were asked 'What do you think is the matter' with the character in
176 the vignette. Responses were coded as 'Schizophrenia' in the presence of the words
177 'schizophrenic/schizophrenia'. Other responses were categorized based on the similarity of
178 thematic content. The most common alternative label for schizophrenia was 'Mental illness'
179 (24.7%, n=96). Schizophrenia was also mislabeled as Depression (11.6%, n = 45). More than a
180 tenth of the respondents used stigmatizing labels such as 'Crazy' and 'Mad' (11.1%, 43). One in
181 eight respondents (12.1%, n = 47) correctly identified and labelled the schizophrenia vignette.
182 (Table 2)

183 For the schizophrenia vignette, respondents were asked to note what parts of the vignette gave
184 them the strongest hints of emotional distress for the character. Hallucination was the most
185 identified symptom of distress for schizophrenia (47.9%, n = 186) while personal neglect was the
186 least identified symptom (14.9%, n = 58). The results of which symptoms were reported in the
187 'schizophrenia' vignette are listed in Table 3. Respondents were asked to recommend a source of
188 help for the character in the vignette. The 'Counsellor' category included the mention of the terms
189 'counsellor', 'counseling' and 'church counselor'. 'Friend', 'classmate' and 'roommate' were

1
2
3 190 combined into the 'Friends' category. The 'Family' category included the responses of 'family',
4 'parents', 'Elders' and 'siblings/brother/sister'. The use of the more specific terms 'Psychologist'
5 191 'Psychologist' or 'Psychiatrist' were afforded their categories. Respondents identified Psychiatrist as the most
6 192 common source of help they thought was required for the vignette character (36.3%, n = 141).
7 193 About a fifth of the sample population recommended a Psychologist (20.4%, n = 79). Table 4. A
8 194 higher proportion of males (14.7%) than females (10.7%) correctly identified and labelled the
9 195 schizophrenia vignette ($X^2 = 1.322$, $p = 0.162$). A higher proportion of females (37.3%)
10 196 recommended a psychiatrist for the vignette character, ($X^2 = 0.287$, $p = 0.336$). Respondents
11 197 between 25-30 years (39.6%, n = 21) had the greatest proportion of respondents who correctly
12 198 identified and labelled schizophrenia. Students of the Faculty of Pharmaceutical sciences also had
13 199 the greatest proportion of respondents who correctly identified and labeled the schizophrenia
14 200 vignette (28.8%, n = 34). There was a strong association between faculty of study and ability to
15 201 correctly identify and label the schizophrenia vignette ($X^2 = 44.557$, $p < 0.001$). The faculty of
16 202 Agricultural sciences had the greatest proportion of respondents who used stigmatizing labels for
17 203 the schizophrenia vignette (21%, n=17). There was a strong association between faculty of study
18 204 and use of stigmatizing label for the schizophrenia vignette ($X^2 = 13.676$, $p = 0.001$). There was a
19 205 strong association between faculty of study and recommending a Psychiatrist for the schizophrenia
20 206 vignette ($X^2 = 25.161$, $p < 0.001$). (Table 5) There was a strong association between Study level and
21 207 ability to correctly identify and label the schizophrenia vignette ($X^2 = 33.175$, $p < 0.001$). Age of
22 208 respondents had no significant association with their mental health literacy.
23 209

210 Discussion

211 The use of a vignette-based questionnaire was employed in this study, which allowed respondents
212 to express their thoughts and beliefs, rather than to select answers from a pool of options. Vignettes
213 are a simulation of real-life events and have been used to investigate different phenomena in the
214 social, behavioral and health sciences.²²⁻²⁴ Although the use of vignettes is fraught with difficulties
215 in establishing reliability and validity, it overcomes most of the problems associated with
216 observation and traditional questionnaire studies such as the Hawthorne effect and ethical
217 dilemmas.²⁵ They have been found to provide a valuable approach that is acceptable to participants
218 and elicits important insight on participant experience and opinions.²⁶ The response rate of the
219 study was high and comparable to response rates obtained from studies carried out among

220 university students.^{27,28} There were more female than male respondents,— this corresponds with
221 findings from a similar study carried out among university students in Malaysia.²⁹ Research among
222 undergraduate students has shown that response rates vary by gender with females being more
223 likely to respond than males.^{30,31} Most of the respondents fell within the ages of 18 and 24 years
224 and were in their second year of study. This is in line with the 6-3-3-4 system of education
225 obtainable in Nigeria where the minimum age of entry into public universities is pegged at 16
226 years. The 6-3-3-4 system was introduced in 1987 following the introduction of the National Policy
227 on Education.³² This was introduced to bring uniformity to the structure of education throughout
228 the country.

229 About one in eight (12.1%) of the University students surveyed could correctly identify and label
230 the Schizophrenia vignette. This proportion of university students is much lower than the 60
231 percent of university students who correctly identified and labeled a schizophrenia vignette in a
232 study carried out in Singapore.³³ This may be because the Singaporean study was restricted to
233 medical students only. Even though many respondents were unable to recognize the problem as
234 schizophrenia, some of the respondents (24.7%) did identify that the character's problem was a
235 mental illness. About a tenth of the respondents reported that the vignette character had 'Emotional
236 problems'. This label may have been induced by the wordings of the questionnaire which
237 demanded respondents to state what parts of the vignette gave strongest hints of emotional
238 difficulties. While some researchers insist that accurate labelling of the disorder is essential for
239 appropriate help-seeking,³⁴⁻³⁶ others argue that accurate 'diagnosis' by laypeople may not
240 necessary as long as there is recognition of the presence of a mental health problem that warrants
241 help-seeking from mental health professionals.³⁷

242 Ironically, some of the respondents (11.6%) thought the character in the vignette was depressed.
243 More than a tenth of the respondents used stigmatizing labels such "Crazy", "Mad" and "Insane".
244 Similar findings have also been reported among secondary school children in Nigeria and other
245 parts of the world³⁸⁻⁴¹. Stigma towards mental illness stems from the traditional concept of danger
246 and incompetence, which is even more evident in the cases of major psychiatric illnesses such as
247 schizophrenia.^{41,42} Five respondents reported that the vignette was a drug addict although the
248 vignette noted that the character was not on any drugs. Whether or not drug abuse is a causative
249 factor in the etiology of schizophrenia has long been debated, and the relationship between

1
2
3 250 psychostimulant use and psychotic symptoms has been well documented over the years. Cannabis
4
5 251 intoxication is well known to precipitate acute psychotic episodes and to worsen symptoms of
6
7 252 existing psychotic illness,^{43,44} but controversy still surrounds the notion that cannabis misuse could
8
9 253 result in a prolonged schizophrenic illness.

10
11 254 Hallucination was the most frequently recognized symptom of schizophrenia by the respondents.
12
13 255 Hallucinations have been defined by the Diagnostic and Statistical Manual of Mental Disorders
14
15 256 fifth edition (DSM-5) as “perception-like experiences that occur without an external stimulus”.
16
17 257 They are vivid and clear, with the full force and impact of normal perceptions, and not under
18
19 258 voluntary control. Hallucinations have been described in various clinical populations, but they are
20
21 259 neither disorder nor disease-specific. They are also frequent in non-clinical populations,⁴⁵ and an
22
23 260 important interest has been developed for voice-hearing in the general population. In schizophrenic
24
25 261 patients, hallucinations can be observed in any of the sensory modalities. In 59% of the cases, they
26
27 262 are auditory, and in 27% of those cases, visual hallucinations are also experienced at some point.⁴⁶
28
29 263 About one-third of the respondents recommended the help of a psychiatrist while one-fifth of them
30
31 264 recommended the help of a psychologist. Thirteen respondents referred the vignette character to a
32
33 265 rehab facility since they were convinced that the character was a drug addict.

34
35 266 The faculty of Pharmaceutical sciences had the greatest proportion of students who correctly
36
37 267 recognized and identified the schizophrenia vignette. The highest number of respondents who
38
39 268 recommended a psychiatrist for the schizophrenia vignette was also from the faculty of
40
41 269 Pharmaceutical sciences. This finding is particularly of interest since student pharmacists are
42
43 270 future health care professionals. It is particularly important for pharmacists who provide
44
45 271 information not only to patients but also to their families and the general population to be well
46
47 272 informed and aware of the role stigma plays as an obstacle to improving mental health care and
48
49 273 quality of life for people with psychopathology (such as schizophrenia). This is essential in the
50
51 274 context of the efforts that must be made to reduce the enormous treatment gap for mental disorders
52
53 275 by increasing the identification and appropriate referrals in community pharmacy settings. The
54
55 276 ability to correctly recognize and identify schizophrenia increased with increasing level of study.
56
57 277 This is expected as increasing study level corresponds to increasing age and exposure and possible
58
59 278 psychological challenges in the university. This association was statistically significant.

279 The strength of this study lies in the fact that a vignette-based questionnaire that allows respondents
280 to articulate their thoughts was used. Although the present study might make useful contributions
281 to the literature on the mental health literacy of university students, some limitations should be
282 mentioned. This research has relied on the use of brief written case vignettes. The extent to which
283 such data can be translated into what is likely to happen in the real world is unclear. Secondly,
284 students were recruited in just one university; it would be desirable to include students from
285 different universities as ethnicity, socio-economic status and cultural beliefs have been shown to
286 affect mental health literacy. Furthermore, the study sample may not be representative of the study
287 population since they were conveniently sampled.

288 **Conclusion**

289 Mental health literacy among students of the University of Nigeria was poor. About one in eight
290 university students surveyed could identify and label the schizophrenia vignette. Hallucination was
291 the most recognized symptom of schizophrenia. Psychiatrists were the most recommended source
292 of help for schizophrenia. Faculty of study and levels of study were associated with parameters of
293 mental health literacy. More investigations on the mental health literacy of undergraduates in
294 Nigeria should be undertaken. Furthermore, research on culturally sensitive interventions to
295 improve mental health literacy should be embarked on.

296 **Contributors**

297 MJO and DOA conceptualized the study and contributed to the data collection. VUO contributed
298 to the study design and interpretation. DOA conducted the analyses, summarized the results and
299 wrote the first draft of the manuscript. All authors contributed to the study design, data
300 interpretation and revisions to the text, and approved the final text and agreed to be accountable
301 for the work.

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305 **Competing interests**

306 None declared

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3 307 Patient consent

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5 308 Obtained.

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8 309 Ethics approval: Ethical clearance for the study was received from the University of Nigeria

9
10 310 Ethical committee

11
12 311 Data sharing statement: Readers who wish to gain access to the data can write to the corresponding

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14 312 author at aluhdeborah@yahoo.com

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Table 1: Socio-demographic Characteristics of the Respondents

Characteristics	Frequency	Percentage
	n = 388	(%)
Gender		
Male	136	35.1
Female	252	64.9
Age (years)		
< 18	38	9.8
18-24	294	75.8
25-30	53	13.7
>30	3	0.8
Faculty		
Agricultural Sciences (N = 3954)	189	48.7
Arts (N = 4650)	81	20.9

Pharmaceutical Sciences (N = 118 3175) 30.4

Study Level†

100 78 20.1

200 105 27.1

300 100 25.8

400 70 18.0

500 35 9.0

Study level by Faculty

	Pharmacy	‡Agric	Arts
	N (%)	N (%)	N (%)
100	1 (0.8)	52 (64.2)	25 (12.7)
200	30 (25.4)	14 (17.3)	65 (33.0)
300	31 (26.3)	8 (9.9)	64 (32.5)
400	24 (20.3)	7 (8.6)	40 (20.3)
500	32 (27.1)	0 (0)	3 (1.5)

449 †Study level- Academic level of study of students ‡Agricultural sciences

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Table 2: Recognition of the case vignette of Schizophrenia by the respondents

Variable	Frequency	Percentage
Alternative labels		
Negative Emotion†	48	12.4

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3	Spiritual issues‡	16	4.1
4			
5	Crazy/Mad	43	11.1
6			
7			
8	Depression	45	11.6
9			
10	On drugs	5	1.3
11			
12	Mentally ill	96	24.7
13			
14			
15	Correct label		
16			
17	Schizophrenia	47	12.1
18			
19			

20 471 † ‘Emotional problem’, ‘Emotional issue’. ‘Mood swing’

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22 472 ‡ ‘Possessed’, ‘Spiritual problem’, ‘Demon’ ‘Evil spirit’, ‘Spiritual issue’

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Table 3: Identified symptoms for Schizophrenia vignette

Item	Frequency	Percentage
Hallucination	186	47.9
Social withdrawal	155	40.4
Personal neglect	58	14.9
Paranoia	90	23.2

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Table 4: Recommended Sources of help for the schizophrenia vignette

Variable	Frequency	Percentage
Psychiatrist	141	36.3
Friends	8	2.1
Counsellor	41	10.6
God	38	9.8
Psychologist	79	20.4
Physician	56	14.4
Parents	13	3.4
Rehab	13	3.4

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25 528 **Table 5: Association between Respondents' characteristics and parameters of mental health**
26 529 **Literacy**

Variable	Total	Faculty			X ²	P-value
	N = 389	†Pharm.	‡Agric.	Arts		
Label	n (%)	n (%)	n (%)	n (%)		
Schizophrenia	47 (12.1)	34 (28.8)	3 (3.7)	10 (5.3)	44.557	0.000*
Crazy/Mad	43 (11.1)	5 (4.2)	17 (21.0)	21 (11.1)	13.676	0.001*
Source of help						
Psychiatrist	141 (36.3)	60 (50.8)	13 (16.0)	68 (36.0)	25.161	0.000*
Friends	7 (1.8)	4 (3.4)	0(0)	3(1.6)	4.265	0.371
Family	20 (5.2)	6 (5.1)	6 (7.4)	8 (4.2)	1.171	0.557

Study Level

		1 st year	2 nd Year	3 rd Year	Final year		
Label							
Schizophrenia	47 (12.1)	3 (3.8)	1 (1.0)	12 (12.0)	31(29.5)	47.191	0.000*
Crazy/Mad	43 (11.1)	9 (11.5)	10 (9.5)	10 (10.0)	14 (13.3)	0.806	0.848
Source of help							
Counsellor	99 (25.5)	19 (24.4)	33 (24.4)	27 (27.0)	20 (19.0)	4.414	0.220
Psychiatrist	141 (36.3)	16 (20.5)	30 (28.6)	36 (36.0)	59 (56.2)	29.075	0.000*

*Statistical significance at $p < 0.05$, †Pharmaceutical Sciences, ‡Agricultural Sciences

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6 Being a good friend involves knowing when our friends are upset. Would you know when your
7 friends are going through a really hard time? Or, would you know when or where your friends
8 should get help about their problems? This questionnaire contains a brief description of a student.
9 Your job is to read the description and then decide whether you think that this person has a serious
10 problem, and if so, what they should do about it. There are **NO RIGHT OR WRONG**
11 **ANSWERS**—we just want to get some different points of view. The questionnaire is completely
12 **ANONYMOUS**
13

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15 Gender: Male [] Female []

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17 Faculty_____

18
19 Level: 100 [] 200 [] 300 [] 400 [] 500 []

20
21 Age: Less than 18 years [] 18-24 [] 25-30 [] Greater than 30 []

22
23 Obinna is a 20 year old 300 level student. For the past few months, Obinna has stopped seeing his
24 friends and no longer goes to school. He locks himself in his room and does not want to talk to his
25 family. He refuses to take his bath. His parents also hear him walking around his bedroom at night
26 when everyone is sleeping. Even though they know he is alone, they have heard him talking,
27 shouting and arguing as if someone else is there with him in the room. When they try to encourage
28 him to come out, he says he won't leave home because the neighbor is spying on him. They know
29 he is not taking drugs because he never sees anyone or goes anywhere.
30
31

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33
34 In **FIVE WORDS OR LESS**, what do you think is wrong with Obinna?
35

36 _____

37
38 Which parts of Obinna's story are the strongest hints to you that he might be experiencing
39 Emotional difficulties? (Please quote the words from the scenarios that are the strongest
40 hints.) _____
41

42 _____

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44 Where should he go to for help? _____
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For peer review only

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3 STROBE Statement—Checklist of items that should be included in reports of cross-sectional
4 studies
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6 Title and abstract – Pg 1 Line 1, Page 2 Line 36
7

8 **Introduction**

9

10 Background/rationale – Pg 3 Line 71 - 113
11

12 Objectives – Pg 4 Line 114-115
13

14 **Methods**

15
16 Study design – Pg 4 & 5 Line 120-123
17

18 Setting –Pg 4 & 5 Line 120-123
19

20 Participants – Pg 5 Line 124 -136
21

22 Variables – Pg 5 Line 143 -144
23

24 Data sources/Measurement: Pg 5 Line 138-144
25

26 Bias: Pg 4 Line 134-136
27

28 Study size; Pg 4 Line 131
29

30 Quantitative variables: Pg 5&6 Line 148-150
31

32 Statistical methods: Pg 5 & 6 Line 147-154
33

34 **Results**

35 Participants: Pg 6 Line 164-165
36

37 Descriptive data: Pg 6 Line 165-168
38

39 Outcome data: Pg 6 Line 164-165
40

41 Main results: Not Applicable
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43 Other analyses: Pg 7 Line 194-202
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45 **Discussion**

46 Key results: Pg 8 & 9 Line 222, 244 & 253
47

48 Limitations: Pg 10 Line 273-280
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50 Interpretation: Pg 10 Line 280-287
51

52 Generalisability: Pg 10 Line 284-286
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54 Funding: Pg 10 Line 292-293
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