

Research Article

Perception and Acceptability of Being Used for Teaching and Research Among Patients Receiving Care at a Tertiary Hospital, Northwest Nigeria

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Abstract

Patient participation in teaching and research is fundamental to medical education and the advancement of healthcare. Understanding patients' perceptions and their acceptability of such involvement is crucial to ensuring ethical practices and fostering cooperation. This study aimed to assess patients' knowledge, perceptions, and willingness to participate in teaching and research, and to identify factors influencing their acceptability at Barau Dikko Teaching Hospital (BDTH). A descriptive, cross-sectional study was conducted among adult patients attending BDTH, Kaduna. A total of 250 participants were recruited using a systematic sampling technique. Data were collected using a structured, interviewer-administered questionnaire which was used to assess patients' knowledge, perception, and acceptability of participation in teaching and research activities. Data were analyzed using descriptive statistics and logistic regression, with results presented in tables and charts, with statistical significance set at $p \leq 0.05$. The mean age of respondents was 33.3 ± 15.0 years. Overall, 43.3% had good knowledge of being involved in teaching and research activities, while 70.4% demonstrated positive perception of being involved. The majority (84.5%) were willing to participate in teaching and research activities, including allowing medical students to observe consultations, take histories, and participate in research. Multivariate analysis identified education level and willingness to participate were predictors of perception ($p < 0.05$), while perception was significantly associated with willingness to participate ($p < 0.001$). Overall, less than half of the respondents demonstrated good knowledge of being involved in teaching and research activities, but the majority had positive perceptions and were willing to participate. Education level and willingness to participate were predictors of perception of involvement in teaching and research activities.

Keywords

Patient Perception, Knowledge Acceptability, Medical Teaching, Medical Research

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1. Background of Study

Teaching hospitals represent distinctive settings where clinical care, medical training, and research activities intersect. Within these institutions, patients not only receive treatment but may also contribute to the education of medical students and participate in research initiatives. [1, 2] This combined role can offer advantages to both patients and the wider medical community, provided that it is managed with openness, clear communication, and respect for patients' rights [3].

At Barau Dikko Teaching Hospital (BDTH), as in many similar facilities, medical students are routinely involved in patient care through observation, interaction, and supervised participation. In addition, researchers collect clinical data aimed at improving healthcare delivery and outcomes [4] These activities are fundamental to producing skilled healthcare professionals and advancing medical knowledge and innovation.

Despite these benefits, patient involvement in teaching and research introduces important ethical, practical, and interpersonal concerns. Although hospitals depend on patient participation for educational and research purposes, patients' awareness, understanding, and consent are not always sufficiently addressed or documented. This situation raises concerns regarding patient autonomy, trust in healthcare providers, and the integrity of both educational and research practices. Previous studies have highlighted the challenges of balancing respect for patients' rights with the demands of medical training and research. Likewise, professional bodies such as the General Medical Council (GMC) emphasize the importance of obtaining proper informed consent, particularly in research contexts. [5] Nevertheless, many patients remain unaware that their clinical encounters may serve as teaching material or contribute to research data.

Patients differ in how they perceive and accept this dual role. Some individuals may view participation positively, considering it an opportunity to support medical advancement or receive more attentive care. [6] Others, however, may feel uneasy or exposed, particularly when they are not fully informed or perceive pressure to participate. The ethical principle of respect for persons requires that patients provide voluntary and informed consent before being involved in activities beyond standard clinical care. [7] Moreover, effective medical education and high-quality research rely heavily on patients' trust and willingness to engage. Without this cooperation, both learning outcomes and research validity may be adversely affected [8].

In BDTH Kaduna, there is limited empirical evidence examining patients' perspectives on participation in teaching and research. Factors such as cultural norms, social dynamics, and institutional practices may uniquely shape patients' experiences within this environment. [4] Additionally, variations in ethical oversight and consent procedures may result in some patients being insufficiently informed. This study therefore

seeks to address this gap by examining how patients perceive their role in the hospital's teaching and research functions and identifying factors that influence their willingness or reluctance to participate.

2. Methodology

2.1. Background of the Study Area

BDTH is a tertiary health facility located in Kaduna metropolis, Kaduna State, North-Western Nigeria. Kaduna State is one of the states of the Federal Republic of Nigeria located in the north-west geopolitical zone of the country. BDTH, formerly known as the "Nursing Home," was established in 1930 as a colonial administration hospital to cater for colonial administrative officials and their families.

The hospital operated as a secondary health care facility until its re-designation by the Kaduna State Government as a teaching hospital on 31st March 2015. However, it became fully operational as a teaching hospital in March 2016 after receiving accreditation from the National Universities Commission (NUC) and the Medical and Dental Council of Nigeria (MDCN), enabling it to commence the training of medical students for the first time.

Efforts toward postgraduate medical training began in 2017 with the accreditation of the Family Medicine programme by the West African College of Physicians (WACP) and the National Postgraduate Medical College of Nigeria (NPMCN). It serves as the teaching hospital of the Kaduna State University (KASU) College of Medicine and functions as a referral centre for secondary and tertiary health services in the region [9].

2.2. Study Design

This study was conducted using a descriptive cross-sectional design. The study population comprised of adult patients receiving care at BDTH, Kaduna. Adult patients (aged 18 years and above) who attended clinics or admitted in the hospital and patients who received care in any of the departments where teaching or research activities occur were included in the study and patient who were critically ill or unconscious patients were excluded from the study.

2.3. Sample Size Determination

The sample size was determined using the Fisher's formula for estimating proportions in a population [10].

$$n = \frac{z^2 pq}{d^2}$$

Where n = minimum sample size

Z = standard normal deviate at 95% confidence level (1.96);
 $p = 0.20$ (proportion from previous study) [11].

$$q = 1 - p (0.20) = 0.80; d = 0.05.$$

$$n = (1.96)^2 \times 0.20 \times 0.80 / (0.05)^2 = 245.76$$

A 10% non-response rate was added to obtain minimum sample of 250. Therefore, a minimum of 250 respondents were required.

2.4. Sampling Technique

A multistage sampling method was used to select respondents.

Stage 1: One Teaching hospital (BDTH) was selected from the Teaching Hospitals in the state using simple random sampling technique.

Stage 2: Departments selected were Internal medicine, Surgery, Obstetrics and Gynaecology, Radiology and Dentistry within the Teaching hospital using simple random sampling technique.

Stage 3: Eligible respondents were recruited from the selected departments using systematic sampling technique. The estimated number of patients seen in clinics per day was determined in each of the selected departments, an average of 40 patients were seen per day in the clinics of each department. A systematic sampling technique was used to recruit participants for the study. Calculating for sampling interval using the formulae, $k = N/n$ where; k = sampling interval, N = total number of patients seen per day and n = number of patients to be recruited per day. Substituting the values into the formulae,

$k = 40/20 = 2$. Therefore, one out of every two patients seen during clinic attendance was recruited until the required sample size was reached. Patients that declined to participate were replaced to get the desired sample size. Average of four clinic days were used for the recruitment in each department.

2.5. Data Collection Instrument

Data were collected using a structured, interviewer-administered, pre-coded questionnaire developed specifically for this study and adapted from previous literatures on patient involvement in medical education and health. [8, 11-15] The instrument contained both closed- and open-ended questions and was designed to assess patients' knowledge, perception, and acceptability of being used for teaching and research.

The variables measured in this study included knowledge of teaching and research activities, as well as patients' perception, willingness, and acceptability of being used for teaching and research purposes. Knowledge of teaching and research activities was assessed by scoring each correct response as 1 and each incorrect response as 0. The total obtainable score

was derived from all items in Section B of the questionnaire. The scores obtained by each respondent were summed and converted to a percentage using the formula: obtained score divided by total score, multiplied by 100. Knowledge was graded as either good or poor, where a score of $\geq 50\%$ was regarded as good knowledge, and a score of $< 50\%$ was regarded as poor knowledge. Perception and acceptability were also graded as either positive or negative based on the total scores obtained.

Items assessing perception and acceptability were structured on a three-point Likert scale (Agree, Neutral, Disagree). Responses were scored, and the total obtained was converted into a percentage using the same formula above. Perception towards being used for teaching and research was categorized as good perception (or willingness) when the score was $\geq 80\%$, and poor perception (or not willing) when the score was $< 80\%$. Data were collected using KoboCollect via handheld Android devices.

2.6. Data Management and Analysis

The data was entered into a computer, coded and analyzed using statistical package for social sciences (SPSS) version 27.0 software package. Descriptive statistics were used to summarise variables, and results were presented using frequency distribution and charts. Association between categorical variables were assessed using chi-square test at a significant level of $p < 0.05$. Logistic regression analysis was conducted for variables that were statistically significant at $p < 0.05$ in the bivariate analysis to identify predictors of perception of being involved in research and teaching activities.

2.7. Ethical Clearance

Ethical approval was obtained from the Health Research ethical committee of BDTH with approval number BDTH/HREC/JAN/2026/548/VOL.1 NHREC/BDKHREC/27/23B. All data was kept confidential and used solely for the purpose of the study. Identifiable information was included in the final report, and data was securely stored.

3. Results

A total of 233 questionnaires were duly completed and returned, out of 255 giving a response rate of 88%.

The mean age of the respondents was 33.3 ± 15.0 years and slightly above two-fifths of them were within the 20 – 29 year age group. More than two-thirds had at least secondary education. Slightly above two-fifths of the respondents were self-employed (Table 1).

Table 1. Socio-Demographic Characteristics of the Respondents (n =233).

| Socio-demographic characteristics | Frequency | Percentage (%) |
|-------------------------------------|-----------|----------------|
| Age Group (in years) | | |
| < 20 | 15 | 6.4 |
| 20 – 29 | 100 | 42.9 |
| 30 – 39 | 69 | 29.6 |
| 40 – 49 | 18 | 7.7 |
| 50 – 59 | 14 | 6.0 |
| 60 – 69 | 8 | 3.4 |
| ≥ 70 | 9 | 3.9 |
| Mean ± SD = 33.3 ± 15.0 | | |
| Gender | | |
| Male | 103 | 44.2 |
| Female | 130 | 55.8 |
| Male: Female (M: F) ratio = 1: 1.26 | | |
| Marital Status | | |
| Single | 85 | 36.5 |
| Married | 113 | 48.5 |
| Separated | 19 | 8.2 |
| Divorced | 13 | 5.6 |
| Widowed | 3 | 1.3 |
| Religion | | |
| Islam | 151 | 64.8 |
| Christianity | 61 | 26.2 |
| Traditional Religion | 21 | 9.0 |
| Highest Level of Education | | |
| No Formal Education | 17 | 7.3 |
| Qur'anic Education | 23 | 9.9 |
| Primary Education | 18 | 7.7 |
| Secondary Education | 70 | 30.0 |
| Tertiary Education | 105 | 45.1 |
| Occupation | | |
| Civil servant | 35 | 15.0 |
| Self employed | 96 | 41.2 |
| Student | 46 | 19.7 |
| Unemployed | 56 | 24.0 |

Slightly above half of respondents knew drug trials to be a form of medical research. About a quarter of respondents reported that the research participation carrying no medical risk. Slightly above half of the respondents had no knowledge of the role of medical students in patient care. In addition. In overall, about two-fifths of respondents had good knowledge of medical research and training of medical students (Table 2).

Table 2. Respondents knowledge of being used for medical research and teaching (n=233).

| Knowledge variables/grade | Frequency | Percentage |
|--|-----------|------------|
| Type of medical research known* | | |
| Drug trials | 120 | 51.7 |
| Laboratory research | 84 | 36.4 |
| Community health study | 71 | 30.5 |
| Surgical research | 30 | 12.7 |
| Don't know | 14 | 5.9 |
| Purpose of medical research* | | |
| Improve treatment | 71 | 60.2 |
| Learn new knowledge | 71 | 60.2 |
| Study diseases | 56 | 47.5 |
| Not sure | 12 | 10.2 |
| What level of risk do you think research participation carries | | |
| None | 31 | 26.3 |
| Mild | 45 | 38.1 |
| Moderate | 30 | 25.4 |
| High | 8 | 6.8 |
| Not sure | 4 | 3.4 |
| Did you know, you can refuse participation in teaching or research? | | |
| Yes | 78 | 66.1 |
| No | 40 | 33.9 |
| I know I can withdraw from a medical research at any time | | |
| Yes | 76 | 64.4 |
| No | 42 | 35.6 |
| Awareness of medical students' involvement in patient care (n = 233) | | |
| Yes | 191 | 83.3 |
| No | 32 | 16.7 |

| Knowledge variables/grade | Frequency | Percentage | Knowledge variables/grade | Frequency | Percentage |
|---|-----------|------------|--|-----------|------------|
| Role of medical students in patient care (n = 233) | | | Knowledge grade | Frequency | Percentage |
| Learn skills | 52 | 26.9 | Poor | 132 | 56.7 |
| Assist under supervision | 25 | 13.0 | Good | 101 | 43.3 |
| Observe | 14 | 7.3 | *Multiple responses were allowed | | |
| Not sure | 102 | 52.8 | More than four-fifths of the patients were willing to allow medical students to be present during their interaction with the doctor, allow them take their medical history including personal details under a doctor's supervision and answer questions about their social life when asked by medical students. More than three-quarters of them were willing to allow medical students to be present while a doctor examines them, allow their presence during minor procedures and participate in research activities such as answering questionnaires or giving samples. Overall, majority of the respondents were willing to be involved in teaching and medical research activities, considering it acceptable (Table 3). | | |
| Awareness of the difference between doctors-in-training (students) and qualified doctors? (n = 233) | | | | | |
| Yes | 181 | 76.7 | | | |
| No | 52 | 23.3 | | | |
| Awareness that BDTH is used for training medical students and for research (n = 233) | | | | | |
| Yes | 174 | 74.7 | | | |
| No | 59 | 25.3 | | | |

Table 3. Patients' willingness and acceptability to be involved in teaching and research activities (n = 233).

| Willingness variable | Willing | Neutral | Unwilling |
|---|-------------|------------|------------|
| Allow medical students to be present during your interaction with the doctor | 191 (82.0%) | 33 (14.2%) | 9 (3.9%) |
| Allow medical students to be present in the operating room during your surgery | 164 (70.4%) | 55 (23.6%) | 14 (6.0%) |
| Allow medical students to take your medical history including personal details under a doctor's supervision | 187 (80.3%) | 38 (16.3%) | 8 (3.4%) |
| Answer questions about your social life (smoking, alcohol, extramarital affairs) when asked by medical students | 190 (81.5%) | 36 (15.5%) | 7 (3.0%) |
| Allow medical students to be present while a doctor examines you | 180 (77.3%) | 42 (18.0%) | 11 (4.7%) |
| Allow medical students to examine you under a doctor's supervision | 172 (73.8%) | 42 (18.0%) | 19 (8.2%) |
| Allow medical students to examine you without a doctor present | 160 (68.7%) | 46 (19.7%) | 27 (11.6%) |
| Allow medical students to be present during minor procedures such as blood draw or IV line insertion | 182 (78.1%) | 43 (18.5%) | 8 (3.4%) |
| Participate in research activities such as answering questionnaires or giving samples | 186 (79.8%) | 36 (15.5%) | 11 (4.7%) |
| Allow students to perform minor procedures on you under supervision | 173 (74.2%) | 46 (19.7%) | 14 (6.0%) |
| Acceptability/willingness grading | Frequency | Percentage | |
| Willingness | 197 | 84.5 | |
| Non willingness | 36 | 15.5 | |

More than three-quarters of them agreed that participation in teaching and research improves healthcare quality for oth-

ers; that confidentiality of their information affects their willingness to participate; that their willingness will increase if they received feedback or results after research participation; that if patients, don't teach doctors in training, they won't be able to learn what they need to learn; and that they learnt

something about their health / disease by participating in teaching and medical research. Overall, above four-fifths of the respondents had good perception of being involved in teaching and research activities (Table 4).

Table 4. Patients' perceptions of being used for teaching and medical research activities (n = 233).

| Perception variable | Agree | Neutral | Disagree |
|---|-------------|------------|------------|
| Do you think your participation in teaching and research improves healthcare quality for others | 187 (80.3%) | 43 (18.5%) | 3 (1.3%) |
| Does religion or cultural belief influence your decision to participate | 134 (57.5%) | 58 (24.9%) | 41 (17.6%) |
| Does the level of explanation given before participation influence your willingness | 171 (73.4%) | 55 (23.6%) | 7 (3.0%) |
| Does trust in hospital staff or students affect your willingness to be involved? | 161 (69.1%) | 60 (25.8%) | 12 (5.2%) |
| Do you believe you have the right to refuse participation in teaching or research? | 174 (74.7%) | 49 (21.0%) | 10 (4.3%) |
| Would financial incentives or benefits encourage you to participate in research? | 146 (62.7%) | 54 (23.2%) | 33 (14.2%) |
| Do you think confidentiality of your information affects your willingness to participate | 175 (75.1%) | 49 (21.0%) | 9 (3.9%) |
| Does how polite or respectful the students/researchers are affect your willingness? | 168 (72.1%) | 56 (24.0%) | 9 (3.9%) |
| Would your willingness increase if you received feedback or results after research participation | 175 (75.1%) | 50 (21.5%) | 8 (3.4%) |
| Would you feel fulfilled about being involved in research? | 157 (67.4%) | 56 (24.0%) | 20 (8.6%) |
| I felt comfortable with being asked to participate in medical student physical exam / history taking teaching | 147 (63.1%) | 70 (30.0%) | 16 (6.9%) |
| I felt like I could have said no if I had not wanted to participate in medical student teaching | 170 (73.0%) | 54 (23.2%) | 9 (3.9%) |
| I understood what the experience would be like before saying yes | 151 (64.8%) | 66 (28.3%) | 16 (6.9%) |
| Participation in this teaching has no impact on the care I receive while in the hospital | 157 (67.4%) | 65 (27.9%) | 11 (4.7%) |
| I learnt something about my health/disease by participation in this teaching | 178 (76.4%) | 41 (17.6%) | 14 (6.0%) |
| I patients don't teach doctors in training, they won't be able to learn what they need to learn | 186 (79.8%) | 40 (17.2%) | 7 (3.0%) |
| Patients should expect to participate in teaching when they enter the hospital | 167 (71.7%) | 54 (23.2%) | 12 (5.2%) |
| The medical students treated me with respect | 172 (73.8%) | 51 (21.9%) | |
| Perception Level | Frequency | Percentage | |
| Poor | 69 | 29.6 | 10 (4.3%) |
| Good | 164 | 70.4 | |

On multivariate analysis, those not willing to participate in medical research / teaching were 8.5 less likely to have good perception of being used in medical research and teaching activities compare to those who were willing to be involved AOR = 0.118, 95% CI: 0.049 – 0.281, p < 0.001). Respondents who

had secondary education were 3.3 times more likely to have good perception of being involved in medical research and teaching activities than those who had tertiary education (AOR = 3.266, 95% CI: 1.267 – 8.418, p = 0.014) (Table 5).

Table 5. Logistic regression of the variables associated with perception of being involved in medical research and teaching ($n = 233$).

| Regression Variables | AOR* | 95% CI** | | p – value |
|---|-------|----------|--------|-----------|
| | | Lower | Upper | |
| Age group (in years) | | | | |
| < 20 | 0.733 | 0.081 | 6.623 | 0.782 |
| 20 – 29 | 2.039 | 0.286 | 14.560 | 0.478 |
| 30 – 39 | 3.278 | 0.424 | 25.367 | 0.255 |
| 40 – 49 | 0.998 | 0.101 | 9.888 | 0.999 |
| 50 – 59 | 1.915 | 0.177 | 20.774 | 0.593 |
| 60 – 69 | 0.353 | 0.023 | 5.527 | 0.458 |
| ≥ 70 | 1 | | | |
| Level of Education | | | | |
| None | 0.563 | 0.163 | 1.950 | 0.365 |
| Qur’anic | 0.921 | 0.295 | 2.878 | 0.888 |
| Primary | 0.299 | 0.089 | 1.004 | 0.051 |
| Secondary | 3.266 | 1.267 | 8.418 | 0.014 |
| Tertiary | 1 | | | |
| Previous experience with medical research / teaching activities | | | | |
| No | 0.668 | 0.314 | 1.423 | 0.296 |
| Yes | 1 | | | |
| Willingness to participate in medical research / teaching | | | | |
| No | 0.118 | 0.049 | 0.281 | < 0.001 |
| Yes | 1 | | | |

*AOR = Adjusted Odds Ratio; *CI = Confidence interval.

4. Discussion

The mean age of the respondents in this study was 33.3 ± 15.0 years, with about two-fifths of the respondents falling within the 20–29-year age group. This is slightly lower than findings from a study conducted in Jordan, where the mean age was 42.3 ± 16.1 years. [15] It is also comparable to a study in Port Harcourt, Nigeria, where nearly one-third of the respondents were within the 28–37-year age group. [16] This pattern may reflect similarities in the population structure across these study settings.

Almost half of the respondents had tertiary education as their highest level of attainment, similar to findings from studies conducted in Jordan and Port Harcourt and Jordan, where 53.3% and 60.7% of respondents, respectively [15, 16], had tertiary education. [15, 16] This may be attributed to the generally higher educational status among urban residents, as well

as the fact that these studies were conducted in urban areas where teaching hospitals are typically located.

Drug trials were the most frequently recognized type of medical research among respondents (51.7%), which is comparable to findings from another study where about 51% of participants were aware of drug trials. [17] It is important that patients receive proper education about the various medical research activities they may be involved in before being recruited into such studies. This is necessary because consent can only be legally considered “informed” when adequate information has been clearly communicated and fully understood by the patient.

In this study, most respondents (83.3%) were aware of medical students’ involvement in patient care. This is similar to findings from a study conducted in United Arab Emirates, where all respondents had knowledge of medical students’ involvement in clinical encounters and patient care. [9] Likewise, a systematic review of studies in Europe and North America reported that most patients (80–90%) were aware of

medical students' participation in their care, while another study in Jordan found that the majority (91.9%) of respondents were aware of such involvement. [15, 18] Overall, the general population appears to be well aware that medical students are often involved in patient care, and this awareness is important in shaping patients' attitudes and willingness to allow such involvement. However, in this study, less than half of the respondents demonstrated good knowledge of medical research and teaching activities. This finding is consistent with a study conducted in the United Arab Emirates, where only 40% of patients had good knowledge of these activities. A good level of knowledge about medical research and teaching is essential for fostering positive attitudes, willingness, and patient acceptability of involvement in these activities.

More than four-fifths of the patients in this study were willing to allow medical students to be present during their interactions with doctors, to permit them to take their medical history—including personal details—under a doctor's supervision, and to answer questions about their social life when asked by medical students. These findings are comparable to those of a study conducted in Jordan, where about 84.5% of respondents were willing to allow medical students to take their medical history and personal details. [15] The high level of willingness to allow medical students to be involved in patient care is crucial for ensuring the clinical interaction and exposure required for effective medical training. Therefore, measures that enhance acceptability should always be considered and implemented in patient–student settings to ensure optimal patient cooperation. [15] In this study, overall acceptability of involvement in medical research and teaching activities was 84.5%. This is comparable to findings from a study in Port Harcourt, South-South Nigeria, where 77.1% of respondents indicated their willingness to allow medical students to participate in their care. [16] The observed difference may be attributed to variations in social, demographic, and religio-cultural factors, which can influence individuals' views on personal privacy.

Regarding perceptions of involvement in research and teaching activities, more than three-quarters of respondents in this study agreed that participation in teaching and research improves healthcare quality for others. This finding is consistent with a study in Jordan, where about 60% of participants reported learning more about their health problems through interactions with medical students. [15] The generally high level of positive perception regarding patient involvement in medical training suggests that most patients may be inherently willing to participate in medical education and research activities.

In this study, about two-thirds of the respondents demonstrated a good perception of involvement in medical research and teaching, which is similar to findings from a study conducted in Poland where positive perception was also high. [19] This similarity may reflect common underlying factors influencing patients' perceptions of involvement in medical re-

search and teaching. These factors have been identified to include students' appearance and demeanor, propriety, empathy, and altruism, as well as concerns related to intimacy, privacy, and the proper organization of clinical teaching sessions [20].

This study found in multivariate analysis that, those not willing to participate in medical research / teaching were 8.5 times less likely to have good perception of being involved in medical research and teaching activities than those who were willing to participate. This suggests that an individual's perception of being involved in medical research and training as determined by a number of factors can ultimately determine their willingness to participate in these activities.

5. Conclusion

Less than half of the respondents had good knowledge about being involved in medical research and teaching activities. The majority of respondents considered it acceptable to be involved in teaching and research activities. Most respondents also had a positive perception of being involved in these activities. Those who were not willing to participate in medical research or teaching were 8.5 times less likely to have a good perception of being involved in such activities compared to those who were willing. Hospital management should educate all patients who attend the hospital about the teaching and research activities carried out, the role of medical students in patient care, and the reasons for their involvement.

Abbreviations

| | |
|-------|--|
| BDTH | Barau Dikko Teaching Hospital |
| GMC | General Medical Council |
| HREC | Health Research Ethics Committee |
| KASU | Kaduna State University |
| MDCN | Medical and Dental Council of Nigeria |
| NPMCN | National Postgraduate Medical of Nigeria |
| NUC | Nigeria University Commission |
| WACP | West Africa College of Physician |

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Conflicts of Interest

The authors declare no conflict of interest.

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