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Medical students' awareness and interest in pursuing future career in plastic surgery: a cross-sectional online pilot study

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Abstract

Background Plastic surgery is an evolving surgical specialty, which has areas of overlap with other specialties in surgery. Common misunderstandings about the discipline are found among the general public, medical professionals and medical students. Many students who are aware of the specialty lack good knowledge about its scope. Such poor knowledge can impact negatively on the recruitment of residents to plastic surgery and it can also affect the correct referral of plastic surgery cases to the specialist.

Objectives This study aimed to assess medical students' knowledge about the scope of plastic surgery and their interest in pursuing future career in the specialty. It also aimed to know the factors responsible for the students' interest or non-interest in the speciality.

Methodology A cross-sectional online study done among 223 medical students in Nigeria. Google forms were forwarded to the respondents through WhatsApp and e-mail. The study population were 200 level to 600 level medical students spread across state, federal and private universities in Nigeria. The data was analysed using SPSS 22.0. The variables were represented as numbers and percentages. The level of significance was set at 0.05.

Results Two hundred and seventeen (97.3%) of the students were aware of plastic and reconstructive surgery speciality but only 15% of the total respondents were interested in specializing in plastic surgery. The determinants of interest in plastic surgery included the respondents' school year, intention to undergo cosmetic surgery in the future and following of plastic surgery shows on Television. The procedure most commonly associated with plastic surgery by the students was burns management (95.1%). The determinants of the knowledge of plastic surgery procedures were previous formal lectures on plastic surgery and the presence of full-time plastic surgeon in the teaching hospital.

Conclusion The perception of the work of a plastic surgeon is dependent on exposure to the speciality and a decline in teaching may perpetuate misunderstanding of the work carried out by plastic surgeons.

Keywords Specialty, Plastic surgery, Surgical education

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Introduction

Plastic surgery is an evolving surgical specialty, which is not limited to a particular organ-system, pathology or demography but has areas of overlap with other specialties in surgery [1, 2]. Albeit, it remains poorly understood due to poor knowledge about its scope and misunderstanding from media representation [3]. It is an expanding specialty which encompasses reconstructive surgery, burn care, cosmetic procedures, microsurgery, craniofacial surgery, orthopaedics, and oncology.

The postgraduate residency training program in plastic surgery is affiliated to two colleges in Nigeria: the West African College of Surgeons, and the National Postgraduate Medical College of Nigeria. According to the colleges, a resident is a trainee enrolled in a specialist training program in an accredited institution. The residency training provides an intensive, 6year academic and hands on experience in plastic and reconstructive surgery. Also, the consultants supervise the trainees rotating through their units within the allotted time.[4]

Common misunderstandings about the discipline of plastic surgery are not only limited to the general public but are also found among medical professionals and students. In the media, plastic surgery is mainly presented as synonymous with cosmetic or aesthetic surgery without an iota of reconstructive aspect of the specialty [1]. This may adversely affect the practice of plastic surgery and also possibly influence the interest of medical students who were never exposed to it during their clinical rotations [4]. In a study, most medical students attributed the negative portrayal of plastic surgery to overriding associations with cosmetic surgery [5]. Also, many students who were aware of the specialty lacked good knowledge about its scope and extent [6]. Such poor knowledge and attitude can impact negatively on the recruitment of residents to plastic surgery and it can also affect the correct referral of such cases to the specialist [7].

In another study, 30% of plastic surgery trainees decided on their specialty while they were still in the medical school [8]. Thus, a positive perception of plastic surgery by medical students might be crucial in their choice of the specialty in the future [5]. To address issues around students' interest and recruitment into the speciality, it is imperative to understand the attitudes of the medical students towards the specialty and the possible common misunderstandings that may influence their interest. The factors that may discourage the medical students from pursuing career in plastic surgery should also be looked out for and addressed [9]. This study aimed to explore the awareness of plastic surgery specialty among medical students in Nigeria and to identify the determinants of the students' interest in plastic surgery as a future career.

Methodology

An online cross-sectional pilot study done among medical students from 16 medical colleges across Nigeria. The medical colleges include: Ladoke Akintola University of Technology (LAUTECH), Bowen University, Ekiti State University, University of Ilorin, University of Osun (UNIOSUN), University of Abuja, Lagos State University, Gombe State University, Delta State University, Olabisi Onabanjo University, University of Benin, Ambrose Ali University, Obafemi Awolowo University, Afe Babalola University, Babcock University and University of Lagos. The data was collected from October 15 2022 to January 15 2023. The study population were 200 level to 600 level medical students of 8 state, 5 federal and 3 private universities in Nigeria. The foreign trained and freshers were excluded from the study.

Sample and data collection

The participants were not screened before recruitment. An online questionnaire designed as google form was used to collect the data. The questionnaire was reviewed by two academics for accuracy and was tested among freshly recruited house officers before posting it online. The link to the google form was forwarded via WhatsApp and e-mail to the students by the authors. The survey link was sent directly to 300 students with a response rate of 74.3%. The medical students were asked to forward the link to their fellow medics and also post it on their WhatsApp groups. The introductory page of the google form contained a statement on the aim of the study and a request for the students' consent to participate in the study. The google form consists of questions on sociodemographic information about the students, questions assessing their awareness of plastic surgery, their knowledge about plastic surgery procedures and their interest in plastic surgery speciality. The questionnaire was anonymous and the data were made confidential. Ethical approval was obtained from the LAUTECH Teaching Hospital Ethics and Research Committee.

Statistical analysis

The data was analysed using the IBM Statistical package for Social Sciences Software (SPSS Inc., Chicago, IL, USA) for Windows, version 22.0. The categorical variables were expressed as numbers and percentages. The knowledge of the medical students about plastic surgery procedures was assessed by scoring the correct answers 1 and the incorrect answers 0. The total score for each respondent was obtained by summing up the correct answers. Respondents who scored 1–4 had poor knowledge, those who scored 5–8 had fair knowledge and those who scored 9 and above had good knowledge. Chi-square distribution was used to measure the association between interest in plastic surgery speciality and the

Table 1 Socio-demographic factors

Variable	Frequency	Percentage
Age		
< 20	34	15.2
21–30	187	83.9
> 30	2	0.9
Sex		
Male	97	43.5
Female	126	56.5
School year		
200	20	9.0
300	23	10.3
400	47	21.1
500	67	30.0
600	66	29.6

Table 2 Awareness of plastic surgery speciality

Variables	Frequency	Percentage
Are you aware of plastic and reconstructive surgery		
Yes	217	97.3
No	6	2.7
Any full-time plastic surgeon in your teaching hospital		
Yes	132	59.2
No	40	18.4
Not sure	50	22.4
Any formal lecture on plastic surgery before		
Yes	153	68.6
No	70	31.4
Wants topics on cosmetic surgery to be part of surgery lecture		
Yes	194	87.0
No	5	2.2
Not sure	24	10.8

socio-demographic factors. The level of significance was set at 0.05.

Results

The 223 medical students that took part in this online study had a mean age of 23.27+/- 2.70 years. The male to female ratio of the participants was 1:1.3. The highest number of respondents were in 500 level while the lowest were in 200 level. (Table 1) The students of LAUTECH Medical School accounted for the highest number of the respondents (Fig. 1).

Two hundred and seventeen students (97.3%) were aware of plastic and reconstructive surgery speciality but only 132(59.2%) of all the respondents were aware of a full-time plastic surgeon in their teaching hospital. One hundred and fifty-three (68.6%) of them have had formal lectures on plastic surgery while 87% of the participants want topics on cosmetic surgery to be part of their lecture schedule. (Table 2, Fig. 2)

Two hundred and twelve (95.1%) of the respondents were aware that burns care is part of plastic surgery speciality while only 35.4% were knowledgeable about hypospadias surgery being part of plastic surgery procedures. (Table 3) One hundred and thirty-five (60.5%) of the medical students have undergone plastic surgery rotation. Out of those, 68.9% rated their experience as average while 24.2% rated it as most enjoyable. (Table 4)

Only 15% of the students were interested in plastic surgery speciality while 26% were not sure. Of the respondents who had no interest in plastic surgery, 17% said the speciality is not interesting to them. The other reasons

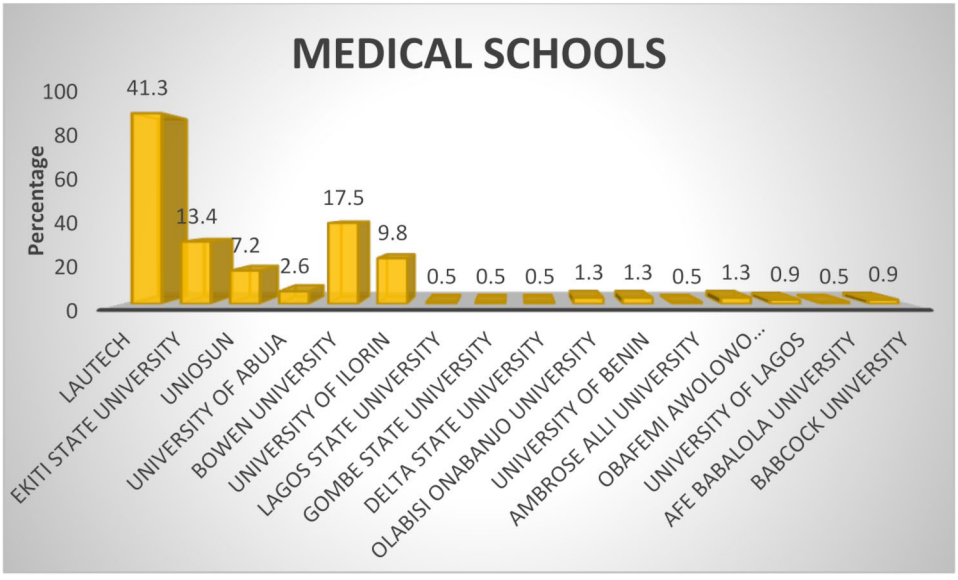

Fig. 1 Distribution of the medical school of respondents

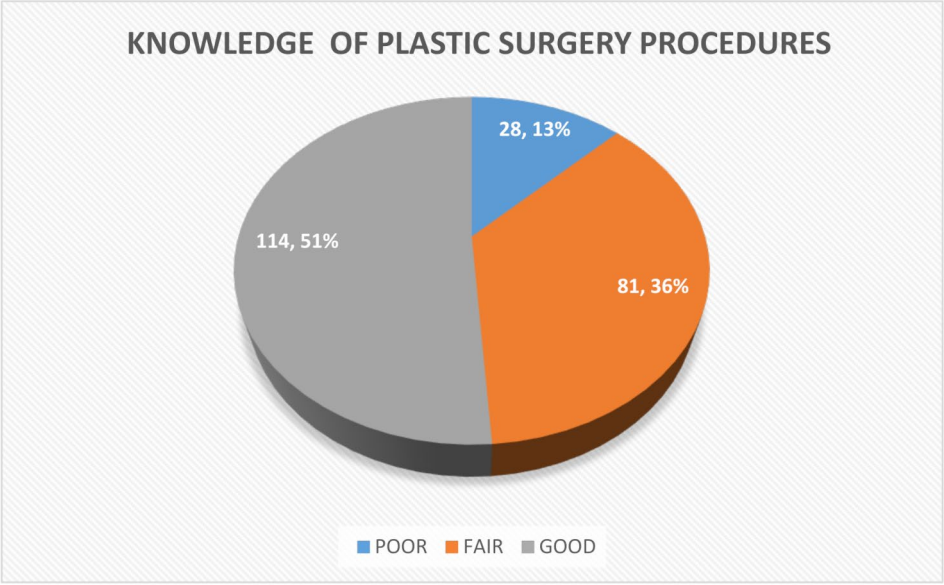

Fig. 2 Knowledge of plastic surgery scope and procedures

Table 3 Students' knowledge of plastic surgery scope and procedures

Variables	Frequency	Percentage
Procedures done by plastic surgeons		
Burns care	212	95.1
Ulcer management	176	78.9
Cleft lip and palate repair	177	79.4
Facial trauma	173	77.6
Breast lift and augmentation	151	67.7
Face lift	152	68.2
Liposuction	152	68.2
Hand surgery	125	56.1
Nerve and tendon repair	96	43.0
Scar management	180	80.7
Vascular repair	83	37.2
Hypospadias surgery	79	35.4
Care of skin cancer	118	52.9

Table 4 Experience during plastic surgery posting

Ever done plastic surgery clinical rotation?		
Yes	135	60.5
No	88	39.5
If yes, how will you rate your experience		
Most enjoyable	32	24.2
Least enjoyable	6	4.5
Average	91	68.9
Not enjoyable	2	1.5
Terrible	1	0.8

given by them include: 'It looks complicated' 'It may be a bit gruesome' 'It's a demanding speciality' 'I can't stand the sight and the smell of wounds' 'It's not well appreciated in this part of the world' 'I don't understand it' etcetera. The most important factor that influenced the choice of plastic surgery speciality was financial prospect and prestige (58.3%) followed by personal interest (44.4%) (Table 5).

Two hundred and thirteen of the respondents (95.5%) and their family members have not had any form of plastic surgery before. One hundred and thirty-five (60.5%) are not willing to have cosmetic surgery in the future while only 32.7% of them followed plastic surgery TV shows (Table 6).

The determinants of interest in plastic surgery speciality include the respondents' school year, intention to undergo cosmetic surgery in the future and following of plastic surgery TV shows with p values of 0.016, 0.001 and 0.001 respectively. The determinants of the knowledge of plastic surgery procedures are previous formal lectures on plastic surgery and the presence of full-time plastic surgeon in the teaching hospital with p values of 0.040 and 0.002 respectively (Tables 7 and 8).

Discussion

The objective of this study is to assess medical students' awareness of plastic surgery and their interest in pursuing future career in the specialty. The awareness of plastic and reconstructive surgery speciality among the students in this study is quite high and this has a good connotation for the speciality and tertiary health delivery in general. Poor awareness on the other hand will have negative repercussions on both surgical and non-surgical training [10]. The non-surgical trainees account for a significant number of the surgical referral base; thus, a better understanding of the speciality will improve the referral process. Only 15.7% of the respondents in this study have interest in pursuing future career in plastic surgery with no statistical difference in the gender and

Table 5 Interest in plastic surgery speciality

Variables	Frequency	Percentage
Do you have interest in plastic surgery speciality		
Yes	35	15.7
No	130	58.3
Not sure	58	26.0
If No, why		
I don't like surgery	10	7.7.
It's not my choice	3	2.3
It's not interesting to me	38	29.2
No reason	33	25.4
I like another specialty	18	13.8
It looks complicated	1	0.8
May seem a bit gruesome	5	3.8
I don't think I will be great at it	2	1.5
It's a demanding specialty	4	3.1
I can't stand the sight and smell of wounds	2	1.5
I have not spent enough time to decide	1	0.8
Management of burn patients can be very stressful	1	0.8
I don't understand it	2	1.5
Patient have to be on admission for a long time	2	1.5
No adequate facility to practice to my satisfaction	2	1.5
It's not well appreciated in this part of the world	1	0.8
Gives too much attention to details and time consuming	1	0.8
Absolutely hated the posting	2	1.5
Religious reasons	1	0.8
Inadequate exposure to plastic surgery	1	0.8
If yes, which of the following factors influenced you		
Financial prospect and prestige	21	58.3
Media portrayal of plastic surgery	10	27.8
Prior exposure to plastic surgery	4	11.1
Personalities of people influenced my career	7	19.4
Personal interest	16	44.4
Plastic surgeon appears happy in their work	10	27.8
Plastic surgeons have rewarding career	8	22.2
Plastic surgeons provide a good role model for medical student	5	13.9
Predominance of non-urgent surgeries	9	25.0
Need for specialty in market	1	2.8
Family recommendation	0	0.0

Table 6 Other aspects of plastic surgery speciality

Variables	Frequency	Percentage
Have you or any member of your family had plastic surgery before		
Yes	10	4.5
No	213	95.5
Is plastic surgery only limited to cosmetic (beauty) surgery		
Yes	1	0.4
No	212	95.1
Not sure	10	4.5
In the future I might have cosmetic surgery		
Yes	36	16.1
No	135	60.5
Not sure	52	23.3
I do follow plastic surgery TV shows		
Yes	73	32.7
No	150	67.3

Table 7 Determinants of interest in plastic surgery speciality

	Plastic surgery option			Total	Statistics
	Yes	No	Not sure		
Sex					$X^2=2.250$
Male	15 (42.9)	52 (40.0)	30 (51.7)	97 (43.5)	df=2
Female	20 (57.1)	78 (60.0)	28 (48.3)	126 (56.5)	pvalue=0.325
Level					$X^2=15.311$
200	4(11.4)	12 (9.2)	4(6.9)	20 (9.0)	df=8
300	0 (0.0)	14 (10.8)	9 (15.5)	23 (10.3)	pvalue=0.016
400	7 (20.0)	21 (16.2)	19 (32.8)	47 (21.1)	
500	11 (31.4)	40 (30.8)	16 (27.6)	67 (30.0)	
600	13 (37.1)	43 (33.1)	10 (17.2)	66 (29.6)	
Awareness of Plastic surgery					$X^2=1.433$
Yes	34 (97.1)	123 (94.6)	53 (91.4)	210 (94.2)	df=2
No	1 (2.9)	7 (5.4)	5 (8.6)	13 (5.8)	pvalue=0.488
Any member of your family had plastic surgery before					$X^2=1.401$
Yes	2 (5.7)	7 (5.4)	1 (1.7)	10 (4.5)	df=2
No	33 (94.3)	123 (94.6)	57 (98.3)	213 (95.5)	pvalue=0.496
Might have plastic surgery later					$X^2=38.948$
Yes	17 (48.6)	15 (11.5)	4 (6.9)	36 (16.1)	df=4
No	12 (34.3)	90 (69.2)	33 (56.9)	135 (60.5)	pvalue=0.001
Not sure	6 (17.1)	25 (19.2)	21 (36.2)	52 (23.3)	
Watch plastic surgery TV show					$X^2=14.016$
Yes	21 (60.0)	36 (27.7)	16 (27.6)	73 (32.7)	df=2
No	14 (40.0)	94 (72.3)	42 (72.4)	150(67.3)	pvalue=0.001

Table 8 Determinants of knowledge of plastic surgery procedures

	Knowledge			Total	Statistics
	Poor	Fair	Good		
Ever had formal lecture on plastic surgery					$X^2=6.431$
Yes	17 (60.7)	49 (76.3)	87 (76.3)	153 (68.6)	df=2
No	11 (39.3)	32 (39.5)	27 (23.7)	70 (31.4)	pvalue=0.040
Any full-time plastic surgeon in your teaching hospital					$X^2=16.901$
Yes	14 (50.0)	42 (51.9)	76 (66.7)	132 (59.2	df=4
No	2 (7.1)	15 (18.5)	24 (21.1)	41(18.4)	pvalue=0.002
Not sure	12 (42.9)	24 (29.6)	14 (12.3)	50 (22.4)	
Gone through plastic surgery clinical rotation					$X^2=4.794$
Yes	15 (53.6)	43 (53.1)	77 (67.5)	135 (60.5)	df=2
No	13 (46.4)	38 (46.9)	37 (32.5)	88 (39.5)	pvalue=0.091

institution. The figure is quite low when compared with that obtained in the study by Jabaiti et al. [1] in Jordan where 19% of students in program A (those who didn't have plastic rotation) and 30% of those in program B (those who had plastic surgery rotation) choose plastic surgery. Other similar studies in the literature recorded even higher prevalence [10, 11]. When compared with interest of medical students in a similar field of Orthopaedic surgery, Imidiegwu et al. reported a prevalence of 27% among final year medical students in Enugu which is slightly higher than that obtained in our study [12].

For the respondents who showed interest in future career in plastic surgery, the most important factor that influenced their choice was financial prospect and prestige, this was also followed by personal interest. Other factors like 'prior exposure to plastic surgery' 'need for specialty in the market' and family recommendation ranked very low. In contrast, according to Ibrahim et al. [9] the most important factors influencing the decision of medical students to choose plastic surgery as a career are 'plastic surgeons appear happy in their work' and 'Plastic surgeons have rewarding careers', and plastic surgeons provide good role models for medical students [9]. The determinants of interest in plastic surgery speciality include the respondents' school year, intention to undergo cosmetic surgery in the future and following of plastic surgery TV shows respectively. Plastic surgery TV shows were watched by 32.7% of the medical students in this study. This finding is the opposite of what was reported by Jabaiti [1] where the group that has less participants who watched plastic surgery TV shows were more likely to have interest in Plastic Surgery. The only significantly positive predictors for considering plastic surgery as a career among the Norwegian medical

students were male gender and thinking that clinical attachment in plastic surgery is 'very valuable' [11].

When asked about why they would not consider a future career in plastic surgery, the commonest responses given by the Jordanian medical students include 'plastic surgery is boring and uninteresting, "plastic surgery is demanding" and 'plastic surgery is delicate and risky' [1] .In this study however, the most common probable reason given by the students who showed no interest in plastic surgery include 'Plastic surgery is uninteresting' and ' I have no particular reason', Other reasons also given by a significant number of the respondents are 'I don't like surgery', I like another speciality' and 'plastic surgery can be gruesome'. Furthermore, some of the students in the study by Burd and colleagues saw plastic surgery as a very technical specialty dealing with complex reconstructions or, as an indulgent specialty focusing mainly on glamour [13]. Other authors also reported lack of interest in plastic surgery as the most discouraging factor in their study [3, 14].

The scope of the work undertaken by plastic surgeons is quite broad and extends across all anatomical regions of the body [15]. With regards to our respondents' knowledge about plastic surgery procedures, more than half of them have good knowledge about the procedures. The management of burn wound is the procedure mostly associated with plastic surgery. This is followed by scar management and the care of cleft lip and palate. In contrast, Khan et al. [14] however reported that most of the medical students in their study lacked knowledge about the field of burn surgery. In addition, a little above half of the respondents know that hand pathology and skin cancers are managed by plastic surgeons while more than two third agreed that cosmetic procedures are done by plastic surgeons. Deblacam et al. [15] in his study demonstrated that plastic surgeons are perceived as cosmetic surgeons only and that the respondents had poor understanding of plastic surgeons' role in skin cancer treatment and hand surgery. According to Raghunathan and Agarwal [6, 16] in different studies, most medical students fail to recognize that hand surgeries are routinely performed by plastic surgeons. In addition Dunkin and colleagues noticed that only 33% and 11% of their respondents agreed that cleft lip/palate and tendon/nerve repair respectively are handled by plastic surgeons [2]. Educating medical students about the plastic surgeon's role in other reconstructive surgeries aside cosmetic surgery will help in the better understanding of the scope of plastic surgery.

Previous studies found that medical students who had plastic surgery rotation had better knowledge than students who did not [1, 6, 10]. Another study also indicated that more students are also likely to consider the specialty with increased exposure. The study by Davis et al. [17] also demonstrated the positive educational impact of a one-day plastic surgery event for medical students with lectures being the most popular followed by clinical skills and visiting the archive. In this study, it was also discovered that the determinants of the knowledge of plastic surgery procedures are previous formal lectures on plastic surgery and the presence of full-time plastic surgeon in the teaching hospital. The perception of the work of a plastic surgeon is therefore dependent on exposure to the speciality and a decline in teaching may perpetuate misunderstanding of the work carried out by plastic surgeons [17]. This study reaffirms the evidence that medical students place a greater emphasis on interest in choosing their future specialty. Therefore, new strategies need to be employed to engage the students and to make the specialty more interesting [18].

Furthermore, it has been established that Africa bears 25% of the global disease burden but produces only 2% of the world's research output [19]. This means that surgical researchers and researches are not where surgical needs are rife [20]. Adegoke et al. [21] also showed that public health expenditure is generally low in sub-Saharan Africa with attendant reducing total factor productivity. The lack of interest in plastic surgery among students may also correlate with the low research productivity in African countries reported in the literature [22, 23]. The scarcity of plastic surgeons contributing to research and disease management in Africa as highlighted by Karamitros et al. [22] in his work further corroborates our finding on the very small percentage of medical students who are interested in the specialty. When there is comparatively low work force in a specialty, there is a high likelihood that the researches done in such fields will be limited. It is also of note that plastic surgery plays a pivotal role in treating burn patients, who make up a significant surgical disease burden in low-income countries. In order to increase the plastic surgery workforce and reduce the burden and morbidity of burns in Africa, there is a need to stimulate a growing interest of the specialty among the medical students [14]. In conclusion, in order to improve on the plastic surgery workforce, there is a need for collaboration with international organizations and institutions from high income nations to establish e-learning platforms [24, 25]. This will help narrow educational disparities, empower local health providers and ultimately improve surgical outcome in Nigeria.

Limitations

Firstly, the potential for a low response rate may have influenced the generalizability of the findings from this study [26]. Additionally, respondents' opinions may change over time, affecting the validity of long-term conclusions. Moreover, there is a possibility of bias in responses due to social desirability or other factors.

Finally, the cross-sectional design of the study limits our ability to establish causal relationships between variables [27].

Supplementary Information

The online version contains supplementary material available at https://doi.org/10.1186/s12909-025-06685-y.

Supplementary Material 1

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Author contributions
The authors were involved in the following aspects. Conceptualization-OSI, ORILiterature search- ORI, OSI, FAA. Study design - OSI, ORI. Data collection - OSI, FAA, ORI. Data analysis - OSICorrections and final write up. - OSI, ORI, FAA.

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Data availability
Data will be made available whenever needed.

Declarations

Ethical approval and consent to participate
Ethical approval was obtained from the Ethical Review committee of LAUTECH Teaching Hospital, Ogbomoso (Approval number-LTH/OGB/EC/2023/319).

Consent for publication
Authors have given the journal consent for publication.

Competing interests
The authors declare no competing interests.

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