

PATIENTS' PERCEPTION ON RESIDENT PARTICIPATION IN THEIR CARE: A POPULATION-BASED SURVEY IN MAKKAH REGION, SAUDI ARABIA

Ghidaa Abdullah Alghamdi^{1*}, Eishah Abdullah Hassan², Shahad Samir Bahattab¹, Omar Abdullah Baqadir², Reuf Yasser Altwerqi¹, Raed Mohammed Babukur², Mohammad Ibrahim Almatrafi³, Mohannad Talal Hemdi⁴.

¹Medical student, Umm Al-Qura University, Makkah, Saudi Arabia.

²Medical Intern, Umm Al-Qura University, Makkah, Saudi Arabia.

³MBBS, Alnoor specialist hospital, Makkah, Saudi Arabia.

⁴Assistant Professor, Department of Surgery, Faculty of Medicine, Umm Al-Qura University, Makkah, Saudi Arabia.

Corresponding author: Ghidaa Abdullah Alghamdi; Email: Ghid1121@gmail.com

Abstract:

Introduction

Residency programs are defined as a structured educational activity comprising a series of clinical or other learning experiences in graduate medical education designed to prepare physicians to enter the unsupervised practice of medicine in a primary specialty by the Saudi Commission of health specialties) SCFHS. This study aims to assess patient understanding and attitudes toward resident participation in surgical and medical care within surgical specialties in Makkah hospitals.

Methods

A descriptive cross-sectional study was performed among patients at all surgical departments in Makkah, KSA (King Abdulaziz Hospital, Al-Noor Hospital, and King Faisal Hospital) through a self-report questionnaire that was simple, reserved participants' privacy, and easily understood by the general population.

Results

A total of 145 adult patients who had undergone surgery participated in the study survey. The majority of participants were female (55.9%), and the ages of participants were similar across all age groups; most of them were in the general surgery department (69%). More than 80% were able to define the resident physician accurately, 38.6% were able to define the resident's role, and 80% chose the attending physician as their main source of information regarding their surgery. Overall, 86% agreed that their care provided by resident physicians was under the supervision of the attending physician; and 85% agreed when asked about their comfort level with the idea of helping residents become better surgeons and physicians by allowing them to participate in all aspects of their care. 72.81% choose more or less agree when asked if they were examined by a resident physician prior to being seen by an attending

physician during their hospital stay. 45.12% answer more or less disagree when asked if they feel that residents are lacked in medical knowledge, and 37% of patients disagreed that the resident physicians were unprofessional.

Conclusion

The majority of responses were able to define the resident's role accurately, and overall, this study sample is more or less agreed about the idea of resident physician participation in their medical and surgical care.

We recommend a prior education of the patients on the specific role of caregivers during their hospital stay, and whether their attendance or performance is for a specific part or all of the surgery.

Keywords

Resident, care, patients' perception, Makkah.

Introduction

Residency programs are defined as a structured educational activity comprising a series of clinical or other learning experiences in graduate medical education designed to prepare physicians to enter the unsupervised practice of medicine in a primary specialty by the the Saudi Commission of health specialties) SCFHS [1, 2]. To achieve standardization of training across all the specialties, the SCFHS has developed accreditation guidelines for residency programs that incorporate six core competencies: clinical knowledge, patient care, systems-based practice, practice-based learning, professionalism, and interpersonal communication [3]. The emphasis on patient safety and medical error reduction has characterized the healthcare landscape, particularly in the intra-operative setting, where iatrogenic complications are more likely to lead to morbidity or mortality [4]. Patients frequently desire the most experienced physician, and their trust in their surgeon is the cornerstone of reassurance during preoperative anxiety. In addition, many patients prefer to know who will be performing their surgery and their role before the surgery [5, 6]. Preoperative psychological studies have shown an accelerated recovery in patients with a stronger sense of control concerning their surgical care. Understanding physicians' level of education and their role in patients' healthcare is important to most patients [6, 7]. Furthermore, other reports reveal that most patients believed residents to be medical students [8]. According to a 2016 study conducted in the USA, most patients welcome resident involvement in their surgical care [9]. Another survey on dermatology outpatients was conducted in Saudi Arabia in 2010, and the results indicated that outpatients viewed residents' participation in the dermatology clinic favorably [10]. In 2005, patients' perceptions of family medicine residents were studied in British Columbia, and it was discovered that more than 70% of patients would prefer to have family medicine residents involved in their care, with a high level of comfort in seeing them [11].

Owing to the lack of studies on patients' perspectives on the involvement of residents in their healthcare process in Saudi Arabia, this study aims to determine the opinions, beliefs, decisions, and concerns of the patients regarding residents and their intervention in their healthcare process.

Methodology:

Study design: A population-based cross-sectional study

Study Population: All patients admitted to surgical departments in Makkah hospitals

Inclusion Criteria: Adults age ≥ 18 years. males and females, Saudi Arabia and non-Saudi, Arabic speakers and Surgical department admissions.

Exclusion criteria: Non-Arabic Speakers, less than 18 years and non-surgical department admissions.

Method for data collection and instrument (data collection technique and tools):

The convenience sample technique will be used to choose the participants at all surgical departments in Makkah, KSA (King Abdulaziz Hospital, Al-Noor Hospital, King Faisal Hospital). A self-report questionnaire will be simple, reserve participants privacy, and be easy to understand by the general population. Items were selected based on a literature review. The questionnaire will be distributed in Arabic. In all surgical departments, the participant will fill out the questionnaire using an iPad, and data collection will be utilized using Google Survey Administration software. Informed consent will be obtained before filling out the study questionnaire, and respondents will receive an electronic device accompanied by the objectives of the survey, the target population, and a request to participate voluntarily. After the approval of the Ministry of Health in Saudi Arabia, the survey will be distributed. (A data collection sheet (questionnaire) is attached in the appendix.).

Outcome Assessment: The primary outcome is to measure the patient's understanding and attitudes towards resident physicians' participation in surgical and medical care using a 7-point Likert scale response ranging from "strongly agree," "agree," "more or less agree," "undecided," more or less disagree, "disagree," to "strongly disagree."

Data collection and management: The study questionnaire will be reviewed by two experts and a pilot study will be done on 20 people. A combined system of codes, phone numbers, and pseudonyms will be set up to ensure the confidentiality of participants' information and prevent duplication. Data will be collected through an Arabic online Google form, which will be distributed using an electronic device (an iPad) to the targeted population. After that, the data will be extracted into an Excel sheet to be analyzed by SPSS 25. Only researchers will have access to the data.

The questionnaire is divided into three sections: the first contains demographic information; the second assesses patients' knowledge of residency and the surgical aspect of their care; and the third determines whether patients are comfortable being treated by residents.

Sample size determination: The minimum sample size required for this study was calculated by OpenEpi version 3.0 in consideration of the following: The population size is about 1579000 (according to the last Makkah population in 2015), keeping the confidence interval (CI) level at 95% and considering 50% of the anticipated frequency. The sample size was calculated to be 385 participants. In case of any possible data loss, the total sample size required is 471 participants.

Statistical Analysis Plan: The data will be analyzed using a t-test to compare the mean difference across two different groups. The one-way ANOVA will be used to compare across more than two groups. Chi-square and Fisher's exact tests will be used to compare the categorical data. Numeric data will be presented as mean \pm SD or as median and interquartile range according to the type of distribution of each variable. A P value less than 0.05 will be considered statistically significant.

Ethical part and confidentiality: The study started after we got the IRB approval with the number : H-02-K-076-0323-913. The patients will be identified by serial codes instead of names and IDs, selecting the patients in an anonymous way, and no one can have access to the data except investigators. The documents will be locked, submitted, and stored in the principal investigator's office.

Result:

A total of 145 patients participated in the study survey. They all had elective surgery performed at Makkah hospitals, with the majority of patients being females, 55.9%, and 69% in the general surgery department. Table 1 shows more details regarding Sociodemographic characteristics.

Characteristics		N	%
Gender	Male	64	44.1
	Female	81	55.9
Age	18-30	38	26.2
	31-45	40	27.6
	46-60	31	21.4
	Over 60	36	24.8
Department	Bariatric Surgery	3	2,1
	Otolaryngology Head and Neck Surgery	2	1,4
	General Surgery	100	69,0
	Neurosurgery	14	9,7
	Orthopaedic Surgery	21	14,5
	Plastic and Reconstructive Surgery	1	,7
	Urology	1	,7
	Vascular Surgery	3	2,1

Table (1): Sociodemographic characteristics of participants (n=145)

The average responses show positive attitudes when the responses to the 7-point Likert scale were tabulated (Figure 1). Overall, 86.21% of patients agreed that all aspects of their care provided by resident physicians were under the supervision of the attending surgeon and agreed that they are comfortable with the idea of helping residents become better surgeons and physicians by allowing them to participate and assisting in all aspects of their care (85.22%, 85.12% respectively). A similar trend was seen when asked if resident physicians are attentive to their needs, at 82.27%. 78,82% agreed to be comfortable with a resident physician performing parts of their surgical procedure under the guidance of the attending surgeon, with 77,44% also agreeing that their needs were addressed more frequently with resident physicians. 72.81% of respondents more or less agree when asked if a resident physician examined them before being seen by an attending physician during their hospital stay. In addition, 45.12% more or less disagreed with the idea that the resident physicians lacked medical knowledge. When asked if resident physicians were unprofessional, 37.34% disagreed. And overall, patients' perspectives of this study sample more or less agree with the idea of resident participation in their care.

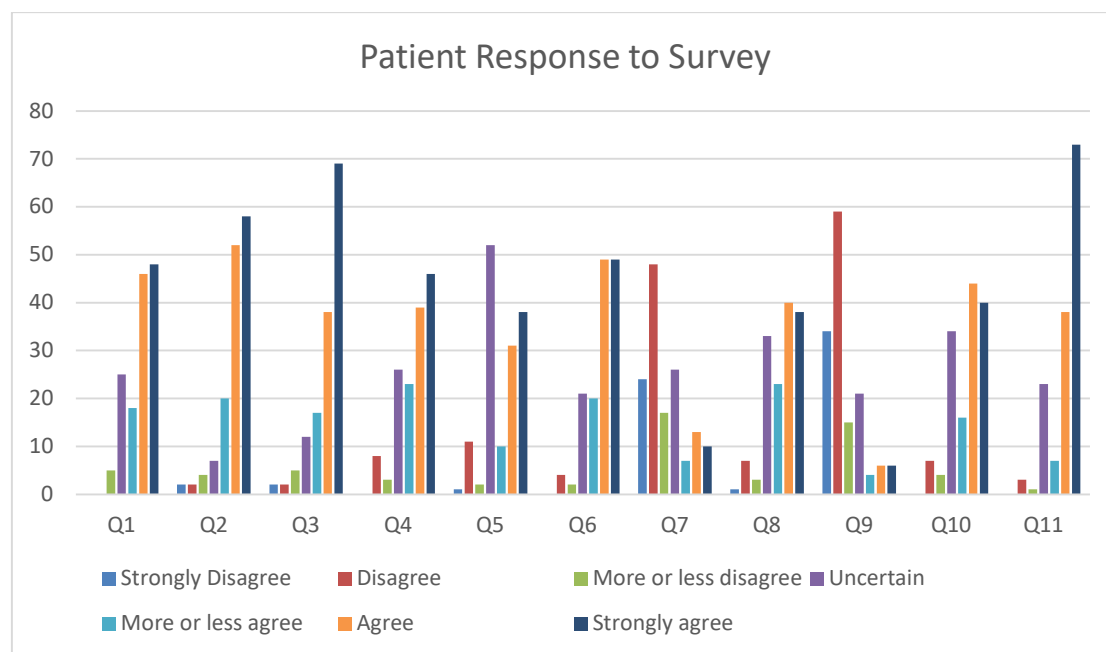


Figure 1: Patient Response to Survey (The horizontal axis corresponds to question numbers provided in the survey)

Question	Choices	Frequency	Percentage
Q1: At a teaching hospital, a resident physician is involved in all aspects of surgical and medical care	Strongly disagree	2	1,4
	Disagree	1	,7
	More or less disagree	5	3,4
	Uncertain	25	17,2
	More or less agree	18	12,4
	Agree	46	31,7

	Strongly agree	48	33,1
Q2: A resident physician can learn by assisting in all aspects of my care	Strongly disagree	2	1,4
	Disagree	2	1,4
	More or less disagree	4	2,8
	Uncertain	7	4,8
	More or less agree	20	13,8
	Agree	52	35,9
	Strongly agree	58	40,0
Q3: I am comfortable with the idea of helping residents become better surgeons and physicians by allowing them to participate in all aspects of my care	Strongly disagree	2	1,4
	Disagree	2	1,4
	More or less disagree	5	3,4
	Uncertain	12	8,3
	More or less agree	17	11,7
	Agree	38	26,2
	Strongly agree	69	47,6
Q4: I am comfortable with a resident physician performing parts of my surgical procedure under the guidance of the attending surgeon	Disagree	8	5,5
	More or less disagree	3	2,1
	Uncertain	26	17,9
	More or less agree	23	15,9
	Agree	39	26,9
	Strongly agree	46	31,7
Q5: During my hospital stay , a resident physician examined me prior to being seen by a attending physician	Strongly disagree	1	,7
	Disagree	11	7,6
	More or less disagree	2	1,4
	Uncertain	52	35,9
	More or less agree	10	6,9
	Agree	31	21,4
	Strongly agree	38	26,2
Q6: Resident physicians are attentive to my needs	Disagree	4	2,8
	More or less disagree	2	1,4
	Uncertain	21	14,5
	More or less agree	20	13,8

	Agree	49	33,8
	Strongly agree	49	33,8
Q7: I feel that the resident physicians lacked medical knowledge	Strongly disagree	24	16,6
	Disagree	48	33,1
	More or less disagree	17	11,7
	Uncertain	26	17,9
	More or less agree	7	4,8
	Agree	13	9,0
	Strongly agree	10	6,9
Q8: Resident physician involvement meant my concerns were addressed more quickly	Strongly disagree	1	,7
	Disagree	7	4,8
	More or less disagree	3	2,1
	Uncertain	33	22,8
	More or less agree	23	15,9
	Agree	40	27,6
	Strongly agree	38	26,2
Q9: I feel that the resident physicians were unprofessional	Strongly disagree	34	23,4
	Disagree	59	40,7
	More or less disagree	15	10,3
	Uncertain	21	14,5
	More or less agree	4	2,8
	Agree	6	4,1
	Strongly agree	6	4,1
Q10: My needs were addressed more frequently with resident physicians	Disagree	7	4,8
	More or less disagree	4	2,8
	Uncertain	34	23,4
	More or less agree	16	11,0
	Agree	44	30,3
	Strongly agree	40	27,6
Q11: All aspects of my care provided by resident physicians was under the supervision of the	Disagree	3	2,1
	More or less disagree	1	,7
	Uncertain	23	15,9
	More or less agree	7	4,8
	Agree	38	26,2
	Strongly agree	73	50,3

attending surgeon			
--------------------------	--	--	--

Table 2: Breakdown of survey answers

Q.NO	Strongly agree	Agree	More or less agree	Uncertain	More or less disagree	Disagree	Strongly disagree	Sum	Median	SD	Percentage	T-Test	Sample Orientation
Q11	73	38	7	23	1	3	0	145	6.03	0.09	86.21	288.33	Agree
Q3	69	38	17	12	5	2	2	145	5.97	0.09	85.22	252.64	Agree
Q2	58	52	20	7	4	2	2	145	5.96	0.08	85.12	280.52	Agree
Q6	49	49	20	21	2	4	0	145	5.76	0.09	82.27	245.92	Agree
Q1	48	46	18	25	5	1	2	145	5.66	0.10	80.89	209.97	Agree
Q4	46	39	23	26	3	8	0	145	5.52	0.10	78.82	175.82	Agree
Q10	40	44	16	34	4	7	0	145	5.42	0.10	77.44	164.90	Agree
Q8	38	40	23	33	3	7	1	145	5.36	0.11	76.55	155.26	Agree
Q5	38	31	10	52	2	11	1	145	5.10	0.12	72.81	111.20	More or less agree
Q7	10	13	7	26	17	48	24	145	3.16	0.15	45.12	(70.10)	More or less disagree
Q9	6	6	4	21	15	59	34	145	2.61	0.13	37.34	(131.78)	Disagree
Overall Response									5.14				More or less agree

Table3: Likert scale analysis

Level	Scale	Interval Length	Lower Limit	Upper Limit
Strongly disagree	1	0.86	1	1.86
Disagree	2	0.86	1.86	2.71
More or less disagree	3	0.86	2.71	3.57
Uncertain	4	0.86	3.57	4.43
More or less agree	5	0.86	4.43	5.29
Agree	6	0.86	5.29	6.14
Strongly agree	7	0.86	6.14	7.00

Table 4: Likert Scale Interval

When asked to give the most accurate definition of a resident physician, most patients selected the response "a doctor pursuing specialty training" (80.7%). The responses to this question were similar among gender and across all age groups (p-value: 0.672 and 0.178, respectively); see Figure 2.

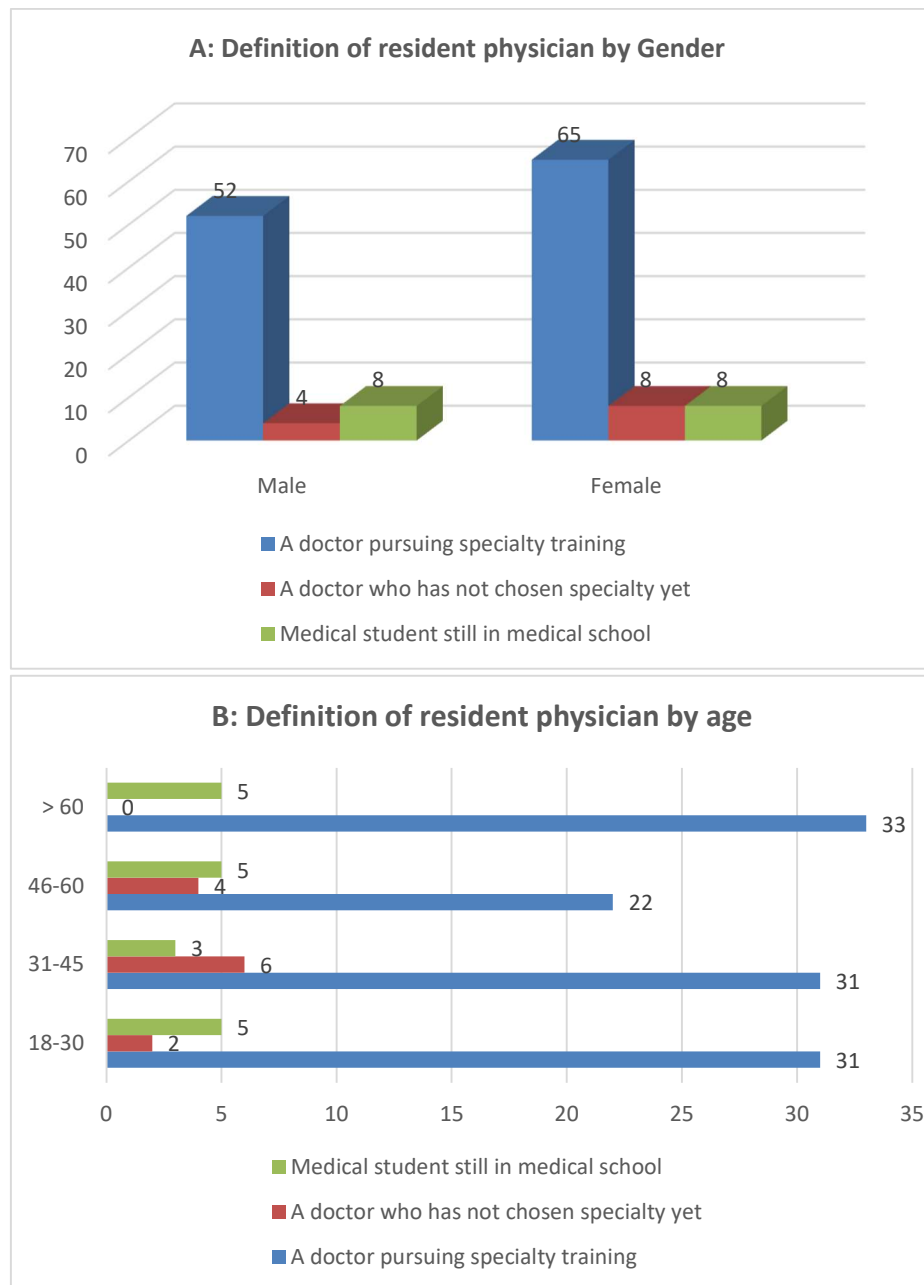


Figure 2: Definition of resident physician, A: by gender, B: by age.

Figure 3 shows the response to the question "What does assisting in surgery mean" based on age and gender (p-values:0.889 and 0.067, respectively). 38.6% of the patients responded that "a resident would perform parts of the operation under supervision".

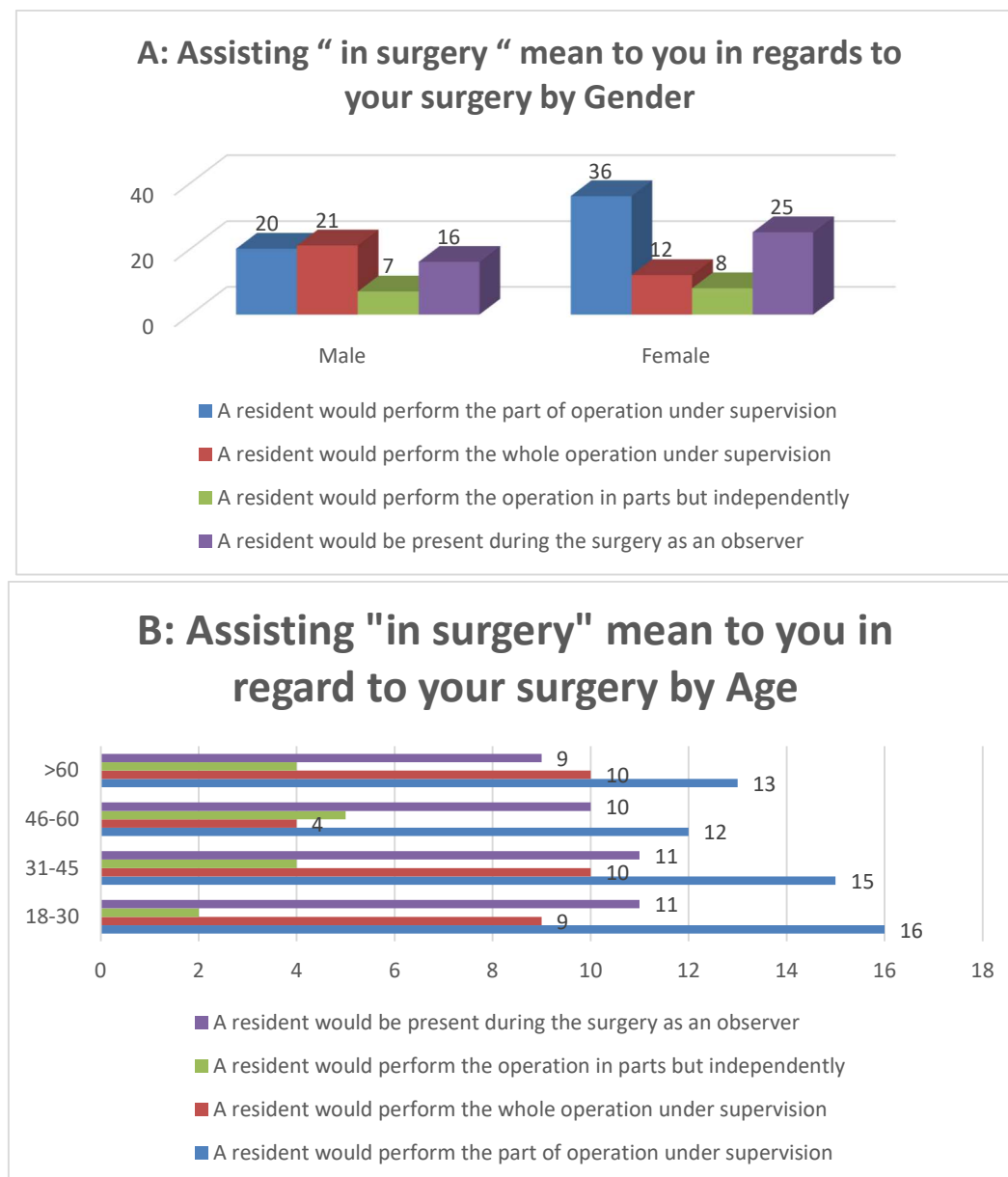


Figure 3: Assisting "in surgery" mean to you in regard to your surgery, A: by gender, B: by age.

Nevertheless, for the question "Who provided the most information regarding surgery", the majority of the patients, 80%, chose "the attending physician" as their answer. However, the difference in response by age and gender for this question was insignificant (p : 0.494 and 0.378, respectively) Figure 4.

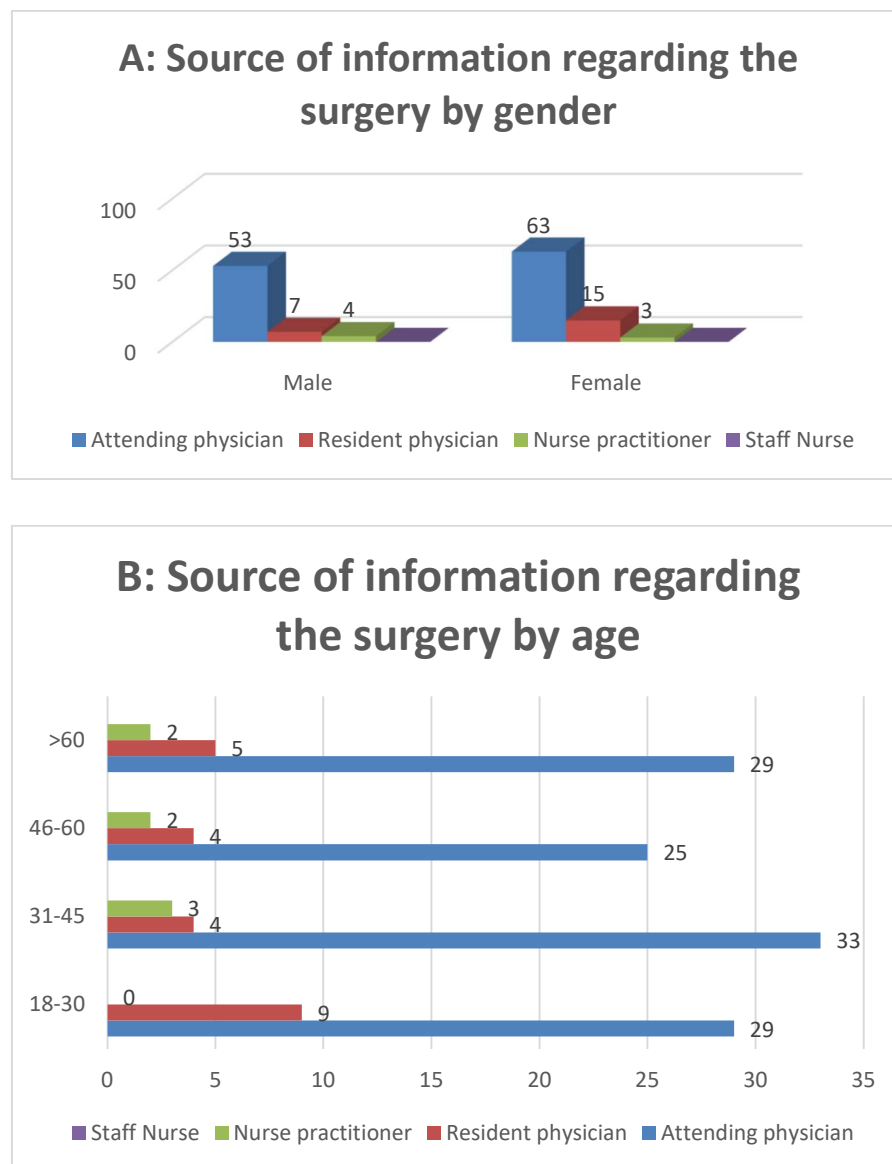
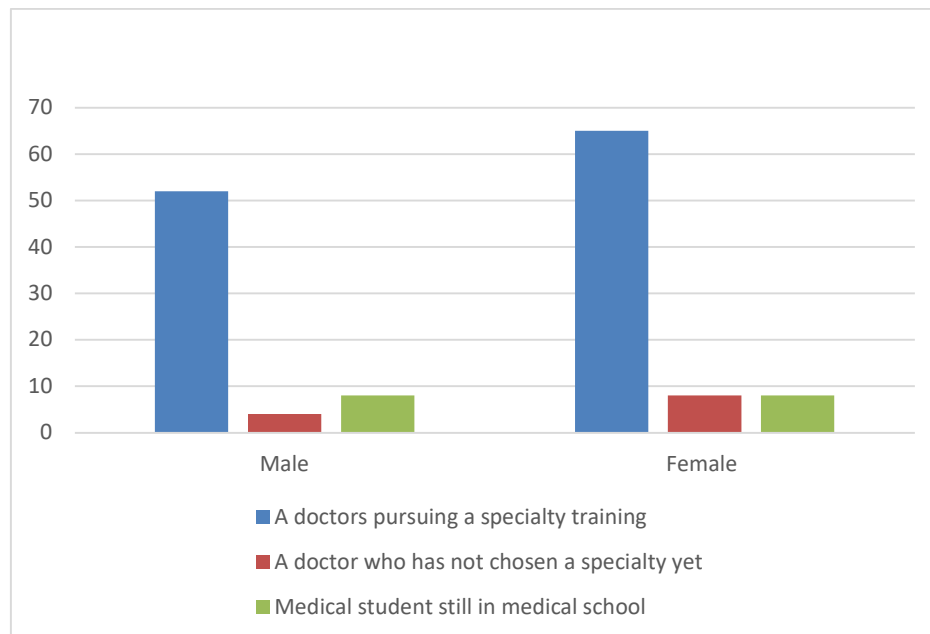
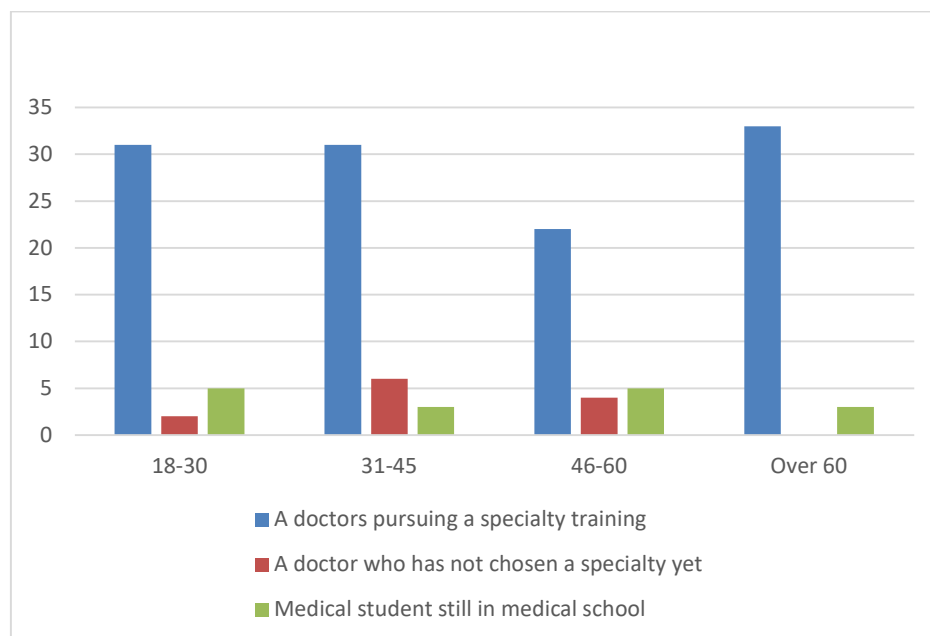


Figure 4: Source of information regarding the surgery, A: by gender, B: by age.

For the opinion of patients regarding residents' lack of medical understanding, 16.6% strongly expressed disagreement, while 33.1% expressed disagreement. When asked if residents were unprofessional, the majority of patients responded with "strongly disagreed" or "disagreed" (23.4 and 40.7%, respectively). It was also determined by how comfortable the patients were. Patients were generally at ease, enabling residents to participate in all facets of their treatment in order to help them become better surgeons (47.6% "strongly agreed" and 26.2% "agreed"). Regarding residents' comfort level with surgical participation, a similar pattern was seen (33.1% "strongly agreed" and 31.7% "agreed"). The majority of patients (80.7%) chose the definition "a doctor pursuing specialty training" as the most correct description of a resident physician when asked to provide one (Figure 3).

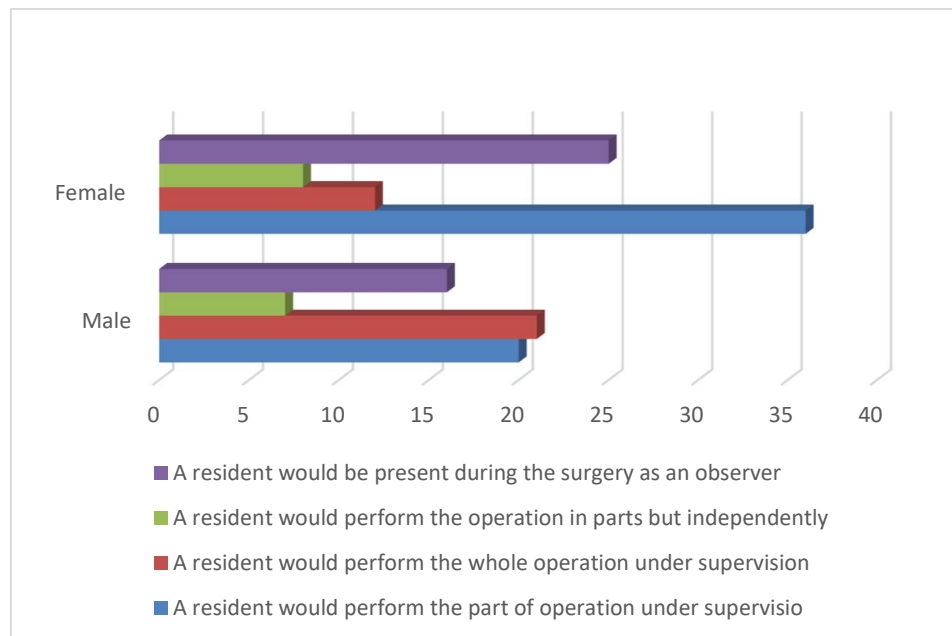


A

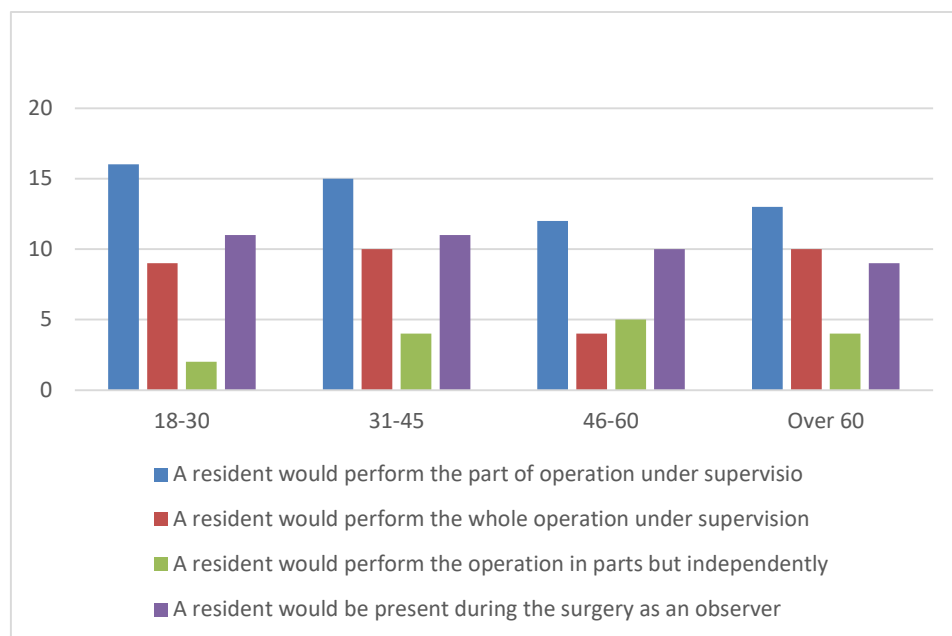


B

All genders and age groups responded to this question similarly (p-values: 0.672 and 0.178, respectively). When asked "what does assist in surgery mean" (p: 0.067 and 0.889, respectively), a similar pattern emerged in the responses from the patients, with 38.6% of them saying that "a resident would perform parts of the operation under supervision" (Figure 4).

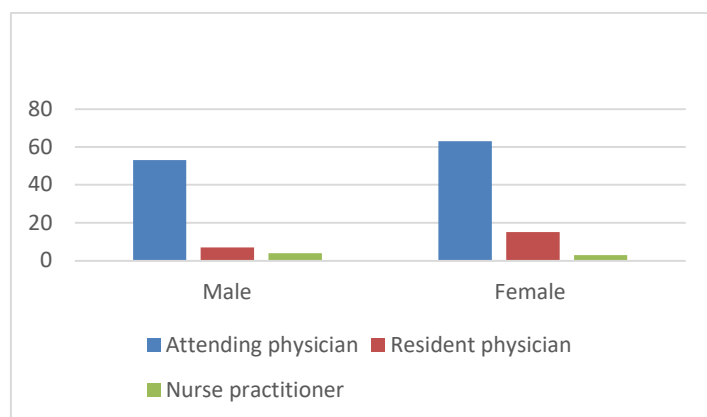


A

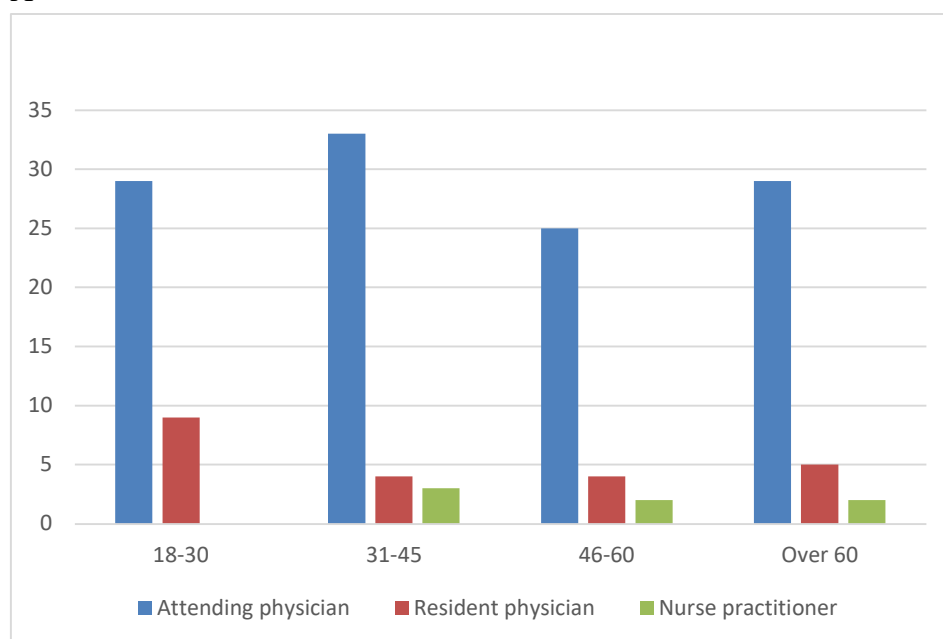


B

On the other hand, the majority of patients (80%) selected "the attending physician" as their response when asked "who provided the most information regarding surgery" ($p: 0.378$). Nevertheless, there was no significant difference in the responses given to this question based on age groups ($p: 0.494$). (Figure 5).

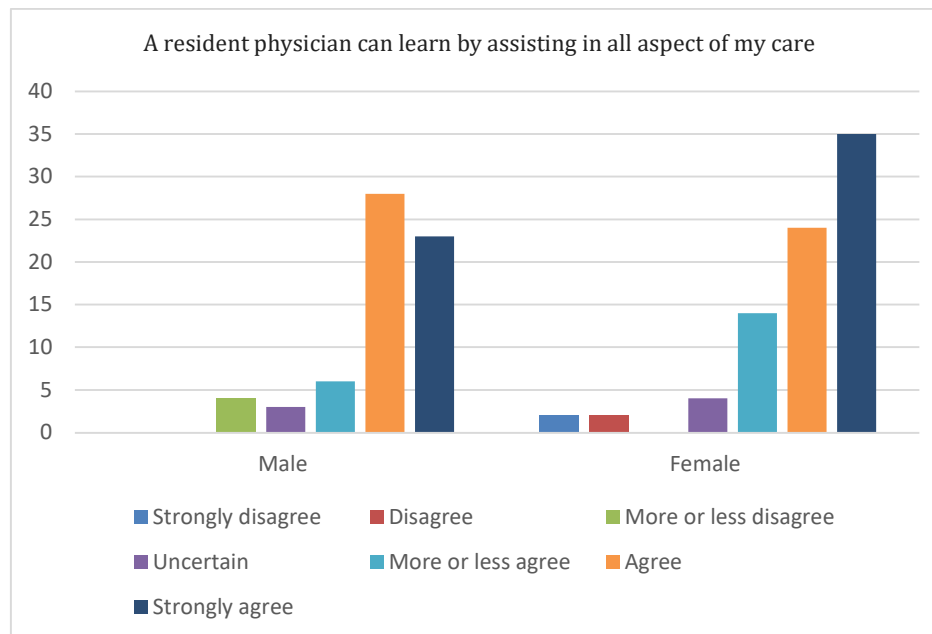


A

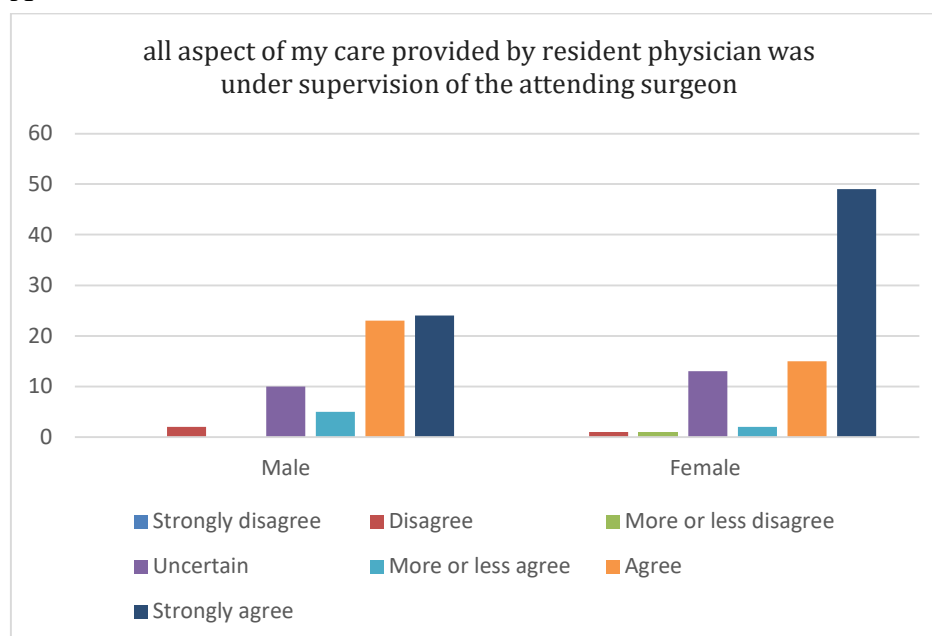


B

And there was a significant response by gender when asked about "A resident physician can learn by assisting in all aspects of my care" ($p = 0.055$). And when asked about "all aspects of my care provided by the resident physician were under the supervision of the attending surgeon" ($p = 0.044$) (Figure 6),.



A



B

Discussion :

The primary objective of our study was to assess patients' perceptions of residents' participation in their care in multiple surgical specialties. Our study suggests that most patients would like to know more about the training level of the residents involved in their care, which will increase their confidence in performing part or all of their surgeries. Compared with previous studies, this study found that patients have significantly more confidence than expected in residents performing their surgery or part of it.

However, they need to clearly understand the training level progression of all caregivers and the exact medical and surgical parts of care.

In a recent study, most patients reported positive experiences with surgery residents. This was congruent with our study's findings, demonstrating that patients are generally receptive to resident involvement in their surgical care. This study found an acceptable percentage of willingness to allow residents to participate in their care, with 47.6% of study participants giving a "strongly agree" and 26.2% giving an "agree" response to resident involvement when directly supervised by an attending surgeon. The reported answer showed that 80.7% of the participants defined the resident as "a doctor pursuing specialty training." A similar study conducted by Fiani B. et al. (2020) found that the majority of answers were also "a doctor pursuing specialty training" [13]. The majority of the patients chose "attending physician" as the answer when they were asked about the major source of information regarding their care and surgery. However, this result was similar to the previous study that explained these responses because the attending neurosurgeon is the healthcare team's most experienced and authoritative figure [13]. Unlike the previous study conducted by Fiani B. et al. (2020), it was inferred that the responsibilities and duties of a resident were clearly described to the patients [13]. In contrast to our study, the bulk of the participants responded with the choice: "A resident would perform the whole operation under supervision." As expected, most of the patients need help understanding the training level progression in medical education, and the participants' lack of knowledge, age, and educational level could explain this response. Other researchers suggest that patients' education may positively affect the perception of resident participation in care [9].

Our study did not investigate whether confidence changes with resident experience; in contrast, the study conducted by Bryce J et al. (2021) assessed patient confidence in the resident performing the surgery based on experience level [14]. However, we found that patients' concerns were addressed more quickly if residents were involved in all their aspects of care. The majority of the patients chose "comfortable" when they were asked about their assessment by a surgical resident, who responded, "26.9% and 31.7% strongly agree and agree, "respectively [13].

Like the previous study, we found a similar result: the majority of the patients disagreed and strongly disagreed when they asked if the residents were unprofessional (64.1%) or lacked medical knowledge (49.7%) [13].

Our study has several strong points. First, it is conducted on multi-centers and on multi-specialties, which will allow a broader image of the perceptions of various specialties and the variations between them. We study only patients' perceptions of the care service to know the most accurate opinions without the emotional responses from the family members' perceptions [12]. Second, the survey questionnaire was a valid tool to measure a direct response, and we provided an opportunity to direct verbal feedback in addition to the ease of use of an online self-reporting survey. This study is not without limitations. Although the data were collected from a multi-center study, the participants were fewer than expected. Hence, the results may need to be more generalizable to a broader population.

The hospitals involved in the survey were in the Makkah region and may not represent all other regions of the country because of participants' age, educational level, and civilizational level variations. In our study, unlike the previous studies, we did not include medical students and interns as caregivers to investigate the patients' perceptions of them. Compared with a previous study, we did not tell the patient the details of their surgery or the complexity of it [12]. Response bias is possible in this study since this is a self-reporting survey.

Like the majority of similar studies, we recommend a prior education of the patients on the specific role of the caregivers during the service and whether their attendance or performance affects a certain part or all of the surgery [5]. We recommend a larger study population so that we can generalize the results in the future [13].

Conclusion:

Well-formed surveys can offer a convenient route for patients to provide objective and subjective feedback. Our study's findings revealed that most patients had an overall positive view of residents' involvement in their care. Most of the patients would like to know the training level of the residents so that it will increase their confidence. Further studies may expand the trial to include a large number of patients.

Acknowledgement:

We thank the participants who all contributed samples to the study.

Ethical approval

Ethical approval was obtained from the research ethics committee of Local Research Ethics Group for Makkah Region Health with Application number: [H-02-K-076-0323-913]. An informed consent was obtained from each participant after explaining the study in full and clarifying that participation is voluntary. Data collected were securely saved and used for research purposes only.

Funding

The study did not receive any external funding.

Conflict of interests

The authors declare that there are no conflicts of interest.

Informed consent:

Written informed consent was obtained from all individual participants included in the study.

Data and materials availability

All data associated with this study are present in the paper.

References:

1. ACCREDITATION COUNCIL FOR GRADUATE MEDICAL EDUCATION GLOSSARY OF TERMS. 2020
2. Accreditation Council for Graduate Medical Education - Welcome page [Internet]. [cited 2022 Dec 2]. Available from: <https://www.acgme.org/Residents-and-Fellows/Welcome>
3. Stepan, J. G., Majahan, A., Dann, A., & Edgar, L. (2023). Accreditation Council for Graduate Medical Education Hand Surgery Milestones V2. 0 Development and Implementation: What Fellowship Directors, Faculty, and Fellows Need to Know. *The Journal of Hand Surgery*.
4. Petravick, M. E., Edgington, J. P., Idowu, O. A., Shi, L. L., & Lee, M. J. (2017). It all depends on who does what: a survey of patient and family member comfort with surgical trainees operating. *Journal of Surgical Education*, 74(6), 1001-1006
5. Cowles, R. A., Moyer, C. A., Sonnad, S. S., Simeone, D. M., Knol, J. A., Eckhauser, F. E., ... & Colletti, L. M. (2001). Doctor-patient communication in surgery: attitudes and expectations of general surgery patients about the involvement and education of surgical residents. *Journal of the American College of Surgeons*, 193(1), 73-80
6. Knifed, E., July, J., & Bernstein, M. (2008). Neurosurgery patients' feelings about the role of residents in their care: a qualitative case study. *Journal of neurosurgery*, 108(2), 287-291.
7. Unruh, K. P., Dhulipala, S. C., & Holt, G. E. (2013). Patient understanding of the role of the orthopedic resident. *Journal of surgical education*, 70(3), 345-349.
8. Malcolm, C. E., Wong, K. K., & Elwood-Martin, R. (2008). Patients' perceptions and experiences of family medicine residents in the office. *Canadian Family Physician*, 54(4), 570-571.
9. Kempenich, J. W., Willis, R. E., Blue, R. J., Al Fayyadh, M. J., Cromer, R. M., Schenarts, P. J., ... & Dent, D. L. (2016). The effect of patient education on the perceptions of resident participation in surgical care. *Journal of surgical education*, 73(6), e111-e117.
10. AlGhamdi, K. M., AlMohanna, H. M., AlKeraye, S. S., AlSaif, F. M., & AlRasheed, S. K. (2014). Perceptions, attitudes, and satisfaction concerning resident participation in health care among dermatology outpatients. *Journal of Cutaneous Medicine and Surgery*, 18(1), 20-27

11. Malcolm, C. E., Wong, K. K., & Elwood-Martin, R. (2008). Patients' perceptions and experiences of family medicine residents in the office. *Canadian Family Physician*, 54(4), 570-571.
12. Petravick, M. E., Edgington, J. P., Idowu, O. A., Shi, L. L., & Lee, M. J. (2017). It all depends on who does what: a survey of patient and family member comfort with surgical trainees operating. *Journal of Surgical Education*, 74(6), 1001-1006
13. Fiani, B., Cathel, A., Arshad, M., Hadi, H., Khan, Y. R., Quadri, S. A., ... & Siddiqi, J. (2020). Patient perspectives on the participation of neurosurgery resident physicians in their care. *Cureus*, 12(2)
14. Bryce, J., Ndoja, S., Goyal, P., Lanting, B., & Howard, J. (2021). Patients' perspectives on the extent of resident participation in the operating room for total hip or knee arthroplasty. *Canadian Medical Education Journal*, 12(1), e21-e31.