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Attitude and Scope of Practice of Minor Surgical Procedures among PHC Physicians in Dammam, Alkhobarand Al-Qatif Cities

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Abstract: ***Background: Minor surgery is one of the beneficial services provided in PHC. It is considered safe, cost effective, satisfying for patient and physician and a lower referral rate. Objectives: to assess PHC physicians attitude about MS, to determine the types of MS being performed and to estimate percentage of physicians practicing MS. Design: A cross sectional study. METHOD: online self-administered questionnaire. SAMPLE SIZE: 464 participants. Results: Majority of participant had a positive attitude towards MS practice in PHC. (36.5%) of physicians considered themselves to be competent to practice MS procedures. (70.8%) have interest to practice MS. (80%) encouraged establishing MS at PHC and (86.9 %) encouraged establishing MS training program. (54.3%) of physicians were not satisfied with referring patients to hospitals. (49.1%) of physicians perform MS procedures, most commonly suturing, giving local anesthesia, and injections at a rate of (65.1%), (50.9%), (42.3%), respectively. Barriers perceived by participants were lack of training, lack of facilities and equipment and fear of complications at a rate of (90.8%), (88%) and (73.3%) respectively. Conclusion: This study demonstrates the importance of adequate physicians' training and establishing a MS program in PHC. And providing PHC with necessary equipment.***

Keywords: attitude, practice, barriers, and minor surgery

Abbreviations

Abbreviation	Explanation
WHO	World health organization
PHC	Primary health care
MS	Minor surgery
GP	General physician
MSI	Musculoskeletal injection
PCP	Primary care physicians
SPSS	Statistical package for social science

1. Introduction

Primary health care is defined as the essential care based on practical, scientifically sound and socially acceptable method and technology made universally accessible to individuals and families in the community through their full participation and at a cost they and the country can afford to maintain in the spirit of selfreliance and selfdetermination. Better health outcomes, efficiency and improved quality of care can be achieved with a strong PHC structure (WHO). Services provided are essential, important and community based. This includes diagnostic, therapeutic, promotive and preventive measures most suitable for the society being served.[1]

Among these services are minor surgical procedures. Which can be defined as" anysurgicalprocedurethatcan be performed in a brief period of time (usually< 1 hour under local anesthesia) and does not under normal circumstances constitute a major hazard to life or function of organs or bodyparts".[2] Provided for the most prevalent illness which can be managed by primary health care providers. Examples: sebaceous cyst, lipomas, ingrown toenail, cryotherapy, bursitis and intraarticular injections.[3]

There are several benefits for performing MS in PHC .It is considered safe with low complication rate, cost effective, more satisfying for the patient and physician and a lower referral rate. Despite these benefits, MS is not fully implemented in all countries.[3],[4],[5],[6]

A consensus recommendation by the Association of Surgeons in Training (2014) proposed that pooling of minor surgical procedures into community centers may prevent surgical trainees from exposure to such experiences, and it may be beneficial for them to practice in these centers.[7]

Another study done in Ireland, published on 2003 measured the number and types of joint and soft tissue injections done by GPs along with perceived barriers. It found that 54% of the sampleperformed joint and soft tissue injections during the past year. The most common performed type was shoulder injection. Sixty-seven percent of them had attended training courses in the past 5 years and 9% of those trained on real patients. The main perceived barriers were inability to maintain injection skills followed by lack of confidence in making the right diagnosis.[8]

A prospective observational study in Australia 2016, studied the impact of a short surgical skills course on the confidence

level of GP's inperforming surgical procedures. The study showed that there is a statistically significant change in the level of confidence after the courses. (P< 0.001).[9]

A study conducted in Bahrain published in 1993 studied the practice, attitude and barriers of minor surgical procedures in PHC. Out of the total participants 93.4% performed suture of simple lacerations, 84.6% performed incision and drainage of an abscess and 82.4% removed foreign bodies from eye, ear or nose. There was no statistical significance between GPs and family physicians. The main surgical procedures rated as essential were: suture of lacerations (95.6%), cryotherapy for warts (94.5%) and incision and drainage of an abscess (92.3%). The most reported barrier were lack of facilities, lack of time and lack of training.[10]

A cross sectional study conducted in Riyadh, Saudi Arabia on 2012 to quantify the number and types of injections performed in PHC and to identify the barriers. The study found that 43.6% of physicians received orthopedic training. 53.1% of them performed joint and soft tissue injections. Most commonly performed injections were knee followed by tennis elbow. The perceived barriers among PCPs were lack of up to date skills and clinic overload.[11]

A study carried in Al-Qatif city, Saudi Arabia between 2006 –2007 published on 2015 to identify the attitude and barriers of performing MS among PHC practitioners found that 68.8% of participants were considering themselves as competent to perform MS in PHC setting. 70.5% were not satisfied with referring patients to hospital for minor surgical illnesses. The main barriers were lack of facilities (90%) followed by lack of training and fear of complications (80% - 73.7% respectively).[12]

1.2 Justification

Performing clinic based surgical procedures is an important part of primary health care services worldwide. In Saudi Arabia, recent studies investigating the current situation of MS services in PHC are limited. With the era of developing PHC adopted by the ministry of health in Saudi Arabia, which started with increasing the number of trained family physicians;it is time to evaluate the current situation of such an essential service for proper utilization of resources.

1.3 Study question

What is the attitude and current practice of minor surgical procedures among PHC physicians in Dammam, AlKhobar and Al-Qatif cities?

1.4 Aim

To study the attitude and scope of practice of minor surgical procedures among PHC physicians in Dammam, Alkhobar and Al-Qatif cities.

1.5 Objectives

1.5.1 Primary objectives

1) To assess PHC physicians attitude about MS.
2) To determine the types of MS being performed in PHC centers.

1.5.2 Secondary objectives

1) To estimate percentage of physicians practicing MS.

2. Methodology

2.1 Study design

A cross sectional study.

2.2 Study setting and time

PHC centers (MOH) in Dammam, AlKhobar and Al-Qatif sectors in eastern province, Saudi Arabia. It was conducted during the period of 2019-2021.

2.3 Study population

All primary healthcare physicians working in Dammam, Alkhobar and Al-Qatif PHC.

2.4 Inclusion criteria

All GPs and family physicians working in Dammam, Alkhobar and Al-Qatif sectors. (general practitioners are physicians who graduated from medical college, MD or MBBS, but not board or diploma certified)

2.5 Exclusion criteria

Physicians with pure administrative work, i.e. not attending patients.

2.6 Sampling and sample size

Estimated number of physicians is 464. All physicians will be included in the study.

2.7 Data collection method

Data is collected through online self-administered questionnaire that is sent to each doctor through e-mail or mobile as feasible. 2 reminderswere sent for those who did not response to increase the response rate.

2.8 Data collection tool

A questionnaire is constructed by the researchers with variables obtained after extensive literature review. The questionnaire was tested for validity and reliability by 3 consultants in the relevant specialties and pilot study. Pilot study was done on 30 family medicine residents.

The questionnaire consists of 4 parts:

1) Demographic data of physicians which includes: age, gender, nationality, qualifications, years of experience,

sector, received training about surgical skills and the presence of minor surgery room in the PHC.
2) Physicians attitude towards minor surgical procedures in PHC: Considering the aspect of competency and interest in performing MS, belief in the importance of MS,desire to improve surgical skills, physician satisfaction with referring patients to secondary care for minor surgical illness and if patients would be more satisfied when managed in the PHC center.
3) Scope of minor surgical procedures physicians practicing, among a list of minor surgeries.
4) A list of factors which can be considered as barriers preventing physicians from performing MS.

2.9 Study variables

1) **Independent variables:** Age, gender, nationality, qualification, years of experience, sector, any previous surgical training and the presence of minor surgery room in the PHC.
2) **Dependent variables:** Physicians' attitude, scope of practice and perceived factors affecting their practice.

2.10 Data analysis

Using Statistical Package of the Social Sciences (SPSS) version 23, on personal computer. The type of statistical tests were Chi-square , one way ANOVA. Level of significance will be considered as 95 % for CI (confidenceinterval) and ≤ 0.05 for P value.

2.11 Ethical consideration

1) Approved by Family Medicine Program in Eastern Province before conducting the research.
2) As data was collected through online self administered questionnaire, participant answer to the questionnaire were considered as an agreement to participate in the study.
3) All data was dealt with strict confidentiality and used for research purposes only.
4) The researchers have no conflict of interest.

2.12 Budget:

This studyis self-funded.

3. Results and Discussion

Table 1 describes the biodemographic characteristics. The study questionnaire was sent to 464 participants. A total of 175 have completed the questionnaire (response rate 37.7%). Around (39.4%) of physicians were from Al-Qatif sector while (38.3%) and (22.3%) were from Dammam and Alkhobar sectors respectively. The majority (62.9%) of physicians were females, between the age of 25 to 35 years (62.9%), Saudi (94.3%), and married (86.3%). About (65.7%) of physicians were MBBS certified while (28%) and (6.3%) were family medicine board and diploma certified respectively. The majority were general practitioners accounting for (47.4%) while (28.6%), (13.7%), (10.3%) were family medicine residents, specialists, and consultants respectively. Regarding years of experience, (33%) worked for less than a year while (28.6%), (28%) worked for 6 to 10 years and more than 10 years respectively. More than two-thirds of participants (75.4%) received surgical training during internship while (42.3%) received training during residency. More than two-thirds (77.7%) did not have a minor surgical room in the PHC however (49.7%) perform minor surgical procedures. The mean of number of clinics covered per week is 8 while the mean of number of patients with minor surgical illness is 4 per week.

Table 1

		Count	Column N %
Age	25-35	110	62.9%
	36-45	44	25.1%
	>45	21	12.0%
Gender	male	65	37.1%
	female	110	62.9%
Nationality	saudi	165	94.3%
	non-saudi	10	5.7%
Marital status	single	24	13.7%
	married	151	86.3%
Qualifications	MD or MBBS	115	65.7%
	family medicine diploma	11	6.3%
	family medicine board	49	28.0%
your current job title	family medicine consultant	18	10.3%
	family medicine specialist	24	13.7%
	family medicine training resident	50	28.6%
	general practitioner	83	47.4%
years of experience	<1 year	18	10.3%
	1-5	58	33.1%
	6-10	50	28.6%
	>10	49	28.0%
Current PHC Center sector:	Dammam	67	38.3%
	Alkhobar	39	22.3%
	al-qatif	69	39.4%
none	yes	17	9.7%
training during internship	yes	132	75.4%
during residency	yes	74	42.3%
courses	yes	55	31.4%
elective minor surgery rotation	yes	20	11.4%
Is there a minor surgery room in the PHC you are working at ?	yes	39	22.3%
	no	136	77.7%
Do you perform minor surgical procedures?	yes	86	49.1%
	no	89	50.9%

Table 2 summarizes the results of physicians' attitudes towards MS practice at PHC. The majority of the participant had a positive attitude towards minor surgical practice in PHC. Around (70.8%) agreed on having an interest in practicing MS, while much less number (14.3%) disagreed. (80%) of participants encouraged establishing MS at PHC and most of them (86.9 %) encouraged establishing minor surgery training programs. The majority were not satisfied with referring patients to the hospital and believe that

patients would be more satisfied if they were managed in PHC.

Table 2

		Count	Column N %
[You feel yourself competent to practice minor surgical procedures]	disagree	49	28%
	neutral	62	35.4%
	agree	64	36.5%
[You encourage establishing minor surgery at PHCC.]	disagree	24	14.3%
	neutral	26	14.9%
	agree	124	70.8%
[You encourage establishing minor surgical program-training at PHCC.]	disagree	9	5.1%
	neutral	26	14.9%
	agree	140	80%
[You believe that minor surgery is difficult to manage on PHC level.]	disagree	8	4.6%
	neutral	15	8.6%
	agree	152	86.9%
[You feel satisfied with referring patients to hospital for minor surgical procedures.]	disagree	98	56 %
	neutral	38	21.7%
	agree	39	22.2%
[You think patients would be more satisfied if their minor surgical procedures done in PHC.]	disagree	95	54.3%
	neutral	42	24.0%
	agree	38	21.7%
	disagree	18	10.3%
	neutral	30	17.1%
	agree	127	72.5%

Figure 1 illustrates participants' practice of MS in PHC. Most performed (independently) surgical procedures were suturing, giving local anesthesia, and giving injections with a rate of (65.1%), (50.9%), (42.3%), respectively. On the other hand, the least observed procedures were trigger finger injection, IUCD insertion, reduction of dislocated joints, and joint aspiration/injection at a rate of (74.3%), (64.6%), (62.9%), and (58%) respectively.

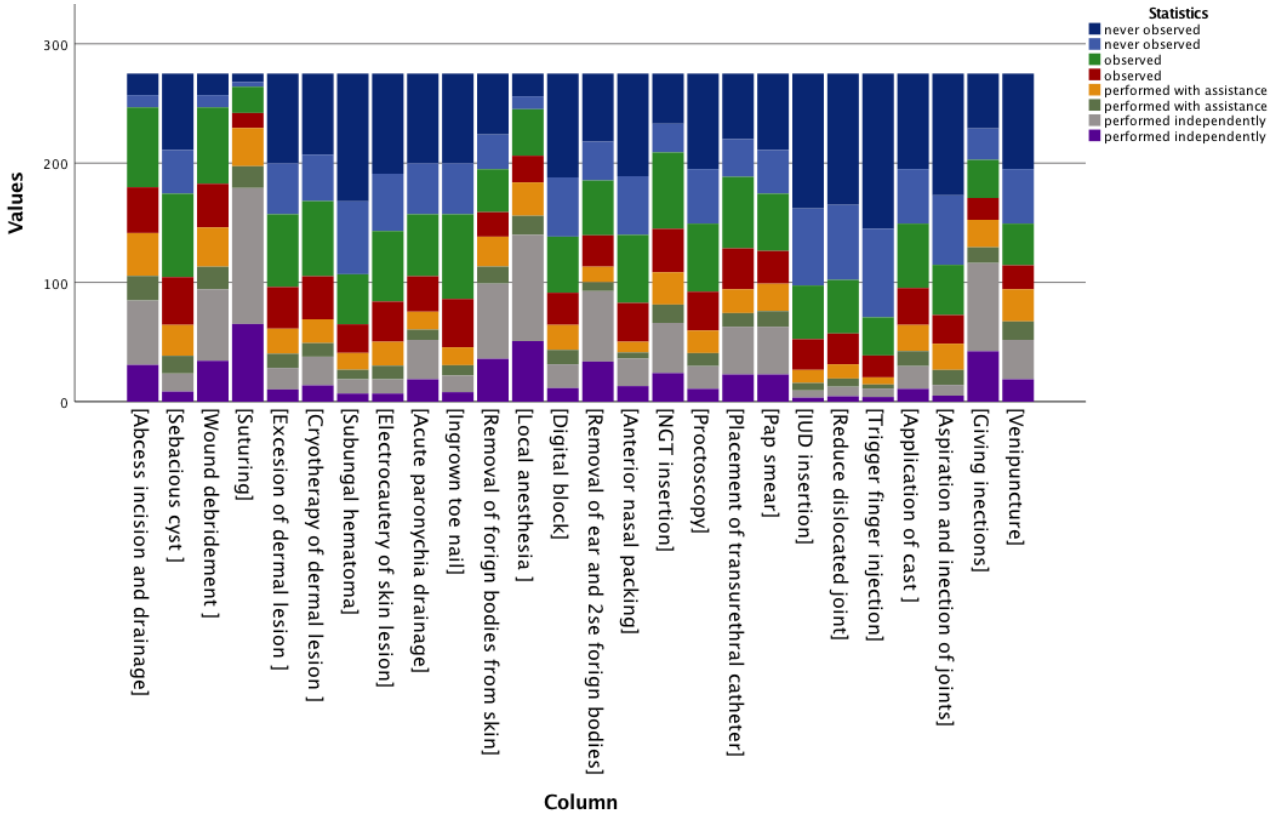

Figure 1

Table 3 demonstrates perceived barriers to perform MS in PHC. (90.8%) of participants perceived lack of training as a barrier for MS practice and around (88%) of participants agreed that lack of facilities and equipment were barriers against MS performance. (73.3%) of participants considered fear of complications was a barrier as well.

Table 3

		Count	Column N %
[Lack of training]	Disagree	8	4.8%
	Not sure	8	4.6%
	Agree	159	90.8%
[Lack of clinical experience]	Disagree	11	6.3%
	Not sure	20	11.4%
	Agree	144	82.3%
[Shortage of staff]	Disagree	30	17.1%
	Not sure	39	22.3%
	Agree	106	60.6%
[Lack of facilities and equipment]	Disagree	11	6.3%
	Not sure	10	5.7%
	Agree	154	88%
[Fear of complications]	Disagree	17	9.7%
	Not sure	29	16.6%
	Agree	129	73.7%
[Lack of time]	Disagree	22	12.6%
	Not sure	38	21.7%
	Agree	115	65.7%
[Difficulties in establishing the diagnosis]	Disagree	56	32%
	Not sure	58	33.1%
	Agree	61	43.8%

[Medicolegal issues]	Disagree	24	13.7%
	Not sure	45	25.7%
	Agree	133	60.6%

Table 4 Summarizes the relationship between the perceived barriers and biodemographic characteristics of the participants. Lack of training was perceived as a significant barrier (p=0.000) for both Saudi and non-Saudi doctors (92.7% and 60%) respectively. And it was also a significant barrier (p=0.047) for all 3 PHC sectors. Lack of facilities and equipment perceived as a barrier regardless of the age and years of experience of the participants (p = 0.005, p= 0.027) respectively. There was no statistically significant association between all barriers and participants' degree of qualification.

Table 4

			Agree		P. Value
			Count	N %	
Lack of training	Nationality	Saudi	153	92.7%	0.000
		non-Saudi	6	60.0%	
	Current PHC center sector	Dammam	56	83.6%	0.047
		Alkhobar	38	97.4%	
		Al-qatif	65	94.2%	
Lack of facilities and equipment	Age	25-35	102	92.7%	0.005
		36-45	34	77.3%	
		>45	18	85.7%	
	Years of experience	<1 year	15	83.3%	0.027
		1-5	55	94.8%	
		6-10	44	88.0%	
		>10	40	81.6%	

Regarding the type of training, (33.3 %) of Saudi physicians received surgical courses training compared to (0%) of non-Saudi (p =0.027). Family medicine consultants, family medicine specialists, family medicine residents, and general practitioners received training during residency (88.9%, 87.5%, 54%, and 12% respectively) (p = 0.000). There was no statistically significant difference in the number of surgical patients seen per week with relation to the number of clinics covered per week. (Table5)

Table 5

Type of training		None	Training during internship	Courses	Elective minor surgery rotation
Age	25-35	12.7%	73.6%	35.5%	13.6%
	36-45	2.3%	84.1%	25.0%	6.8%
	>45	9.5%	66.7%	23.8%	9.5%
Gender	Male	7.7%	83.1%	29.2%	10.8%
	Female	10.9%	70.9%	32.7%	11.8%
Nationality	Saudi	9.7%	75.8%	33.3%	11.5%
	non-Saudi	10.0%	70.0%	0.0%	10.0%
Marital status	Single	16.7%	70.8%	33.3%	0.0%
	Married	8.6%	76.2%	31.1%	13.2%
	Divorced	0.0%	0.0%	0.0%	0.0%
	Widowed	0.0%	0.0%	0.0%	0.0%
Qualifications	MD or MBBS	11.3%	80.9%	31.3%	9.6%
	Family medicine diploma	0.0%	72.7%	27.3%	18.2%
	Family medicine board	8.2%	63.3%	32.7%	14.3%
Your current job title	Family medicine consultant	0.0%	72.2%	55.6%	22.2%
	Family medicine specialist	4.2%	58.3%	20.8%	8.3%
	Family medicine training resident	14.0%	70.0%	38.0%	16.0%
	General practitioner	10.8%	84.3%	25.3%	7.2%
Years of experience	<1 year	16.7%	61.1%	38.9%	16.7%
	1-5	12.1%	77.6%	34.5%	6.9%
	6-10	8.0%	78.0%	30.0%	14.0%
	>10	6.1%	75.5%	26.5%	12.2%
Current PHC center sector :	Dammam	9.0%	80.6%	25.4%	6.0%
	Alkhobar	15.4%	59.0%	33.3%	12.8%
	Al-qatif	7.2%	79.7%	36.2%	15.9%

Pearson Chi-Square Tests

		None	Training during internship	During residency	Courses	Elective minor surgery rotation
Age	P value	.141	.241	.977	.327	.466
Gender	P value	.488	.071	.638	.630	.833
Nationality	P value	.975	.681	.611	.027	.884
Marital status	P value	.216	.573	.339	.829	.058
Qualifications	P value	.438	.055	.000	.940	.526
Current job title	P value	.267	.041	.000	.036	.189
Years of experience	P value	.523	.510	.519	.727	.568
Current PHC center sector :	P value	.377	.025	.121	.378	.179

Table6 summarizes physicians' performance of minor surgical procedures with their biodemographic data. Age was significant (p=0.001), (85.7%) of physicians aged more than 45 years and (59.1%) of those aged 25-35 years perform minor surgeries. (47.3%) of Saudi participants and (80%) of non-Saudi perform MS in PHC (p= 0.044).

Table 6

Do you perform minor surgical procedures?		Yes	No	P value
Age	25-35	40.9%	59.1%	.001
	36-45	52.3%	47.7%	
	>45	85.7%	14.3%	
Gender	Male	58.5%	41.5%	.058
	Female	43.6%	56.4%	
Nationality	Saudi	47.3%	52.7%	.044
	non-Saudi	80.0%	20.0%	
Marital status	Single	33.3%	66.7%	.095
	Married	51.7%	48.3%	
Qualifications	MD or MBBS	47.8%	52.2%	.605
	Family medicine diploma	63.6%	36.4%	
	Family medicine board	49.0%	51.0%	
Current job title	Family medicine consultant	83.3%	16.7%	.003
	Family medicine specialist	37.5%	62.5%	
	Family medicine training resident	36.0%	64.0%	
	General practitioner	53.0%	47.0%	
Years of experience	<1 year	33.3%	66.7%	.001
	1-5	32.8%	67.2%	
	6-10	56.0%	44.0%	
	>10	67.3%	32.7%	
Current PHC center sector :	Dammam	43.3%	56.7%	.000
	Alkhobar	25.6%	74.4%	
	Al-qatif	68.1%	31.9%	

3.1 Discussion

This research aims to study the attitude and scope of practice of minor surgical procedures and perceived barriers among PHC physicians in Dammam, Alkhobar, and Al-Qatif cities.

This study revealed that most PHC physicians have a positive attitude toward MS procedures in PHC and encourage establishmentof MS service at PHC as well as MS training programs. The practice was limited to certain procedures, most commonly performed procedures were suturing, giving local anesthesia, and injections. This can be attributed to lack of training, lack of facilities and equipment as illustrated in the results.

A study conducted in Bahrain published in 1993 studied the practice, attitude, and barriers of minor surgical procedures in PHC. Out of the total participants,(93.4%) performed suture of simple lacerations, (84.6%) performed incision and drainage of an abscess, and (82.4%) removed foreign bodies from the eye, ear, or nose as opposed to (65.1%,30.9%, and 33.7%) respectively in this study. The most reported Barriers were lack of facilities, lack of time, and lack of training, similar barriers were found in this study.[11]

For example, the rate of joint injections done by GPs in Ireland [9] was(54%) for joint and soft tissue injections, compared to (5.1%) in this study.

In the study which was done by Alfaraj A et al,(68.8%) of physicians consider themselves to be competent to practice minor surgical procedures in contrast to (36.5%)in this study. The barriers considered in that study were lack of training, lack of facility and equipment. The perceived barriers were close to the barriers found in this study[13].

3.2 Study limitations

This is a cross-sectional study with a low response rate that involves only part of the eastern province.

3.3 Recommendation

The results of this study demonstrate the importance of adequate physicians' training and establishing a minor surgery program in PHC. As well as, providing PHC with the necessary equipment.

3.4 Acknowledgements

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Appendix I

Questionnaire
Research title
Attitude and scope of practice of minor surgery among PHC physicians in Dammam, Alkhobar and Al-Qatif city.

The aim of this study is to assess the attitude and scope of practice of minor surgical procedures and the perceived obstacles faced in this service among PHC physicians in Eastern province, Saudi Arabia.

This study is an academic requirement and prerequisite for certification by Saudi Commission for Health Specialties.

Your answer to this questionnaire will be considered as an agreement to participate in this study.

Be assured that all answers you provide will be kept strictly confidential and will be used for research purposes only.

Researchers	E-mail address
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Part I: demographic data

1) Age in years ……
2) Gender :
   Male ☐ Female ☐
3) Nationality :
   Saudi ☐ Non Saudi ☐
4) Qualifications :
   MBBS ☐ Diploma ☐ Board ☐
5) Years of experience :
   < 1 year ☐ 1- 5 years ☐ >5- 10 years ☐ > 10 years ☐
6) Sector :
   Dammam ☐ Alkhobar ☐ Al-Qatif ☐
7) Have received any training about surgical skills:
   Yes ☐ No ☐
8) Is there a minor surgery room at the PHC center you are working :
   Yes ☐ No ☐
9) Do you perform minor surgical procedures?
   Yes ☐ No ☐

Part II: physician's attitude towards minor surgical procedures in PHC

10) Do you have a previous surgical experience?
    Yes ☐ No ☐
11) Do you have advanced cardiac life support certification?
    Yes ☐ No ☐
12) Do you find yourself competent to practice minor surgical procedures?
    Yes ☐ No ☐
13) Do you find yourself interested to practice minor surgical procedures?
    Yes ☐ No ☐
14) Would you encourage establishing minor surgery at PHCC?
    Yes ☐ No ☐
15) Would you encourage establishing minor surgery program\ training?
    Yes ☐ No ☐
16) Do you believe that minor surgery is difficult to manage on the PHC level?
    Yes ☐ No ☐
17) Do you feel satisfied with referring patients to hospital for minor surgical illness?
    Yes ☐ No ☐
18) Do you think patients would be more satisfied if their minor surgical illness managed in PHC?
    Yes ☐ No ☐

Part III: Physician's own practice of minor surgical procedures

For each procedure, rate our level of experience:

Procedure	Observed	Never observed	Never performed	Performed with assistance	Performed independently
19. Abscess incision and drainage					
20.Sebaceous cyst					
21.Wound debridement					
22.suturing					
23.Excision of dermal lesion					
24. Cryotherapy of skin lesion					

25. Electrocautery of skin lesion					
26. Subungual hematoma					
27. Acute paronychia drainage					
28.Ingrown toe nail					
29.Removal of foreign bodies from skin					
30. Local anesthesia					
31. Digital block					
32. Removal of ear and nose foreign bodies					
33. Anterior nasal packing					
34. NGT insertion					
35 Proctoscopy					
36. Thrombosed external hemorrhoids I& D					
37. Placement of transurethral catheter					
38. Pap smear					
39. IUD insertion					
40. Reduced dislocated joint					
41. Application of cast					
42. Aspiration & injection of joints					
43. Giving injections					
44. Venipuncture					
45. Neonatal circumcision					
46. Trigger finger injection					

Part IV: perceived barriers to perform minor surgical procedures in PHC center

Choose one for each statement:

Barrier	Strongly agree	agree	Not sure	disagree	Strongly disagree
47. Lack of training					
48. Lack of clinical experience					
49. Shortage of staff					
50. lack of facilities					
51. Fear of complications					
52. lack of time					
53. It is easier to refer the patient					
54. Difficulties in establishing the diagnosis					
55. Medicolegal issues					

Thank you for your participation.