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# Challenges and The Possible Solutions of The Problems Faced by The Postgraduate Trainees During the Practical Training of The Family Medicine Program in The Sudan Specialization Board

***(Running title:** Trainee Experiences in the Practical Training of Family Medicine Program)*

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## Abstract

**Background:** The family medicine discipline focuses on the management and prevention of common and chronic illnesses in all communities. Accreditation of the training methods in family medicine programs is required to improve the program and achieve its outcomes. This article aimed to investigate the challenges and possible solutions facing the trainees in the practical training of the Family Medicine Program.

**Materials and Methods:** A cross-sectional study was conducted at Sudan Medical Specialization Board, a postgraduate institute, from March 2023 to September 2023. Two hundred and fifty-four trainees were selected using simple random sampling techniques. Structured open-ended questionnaires were used to collect the study data. Statistical analysis for quantitative data was performed using Statistical Package for Social Sciences version 24. The result was considered significant when the p-value of the chi-square was < 0.05. Thematic analysis was used for the analysis of qualitative data.

**Results:** A total of 254 trainees were studied. The majority of studied trainees were females (87.4%), their age range 31–35 years (70.1%), in their fourth academic year (66.2%). Trainees face several challenges during their training: limited number of trainers (76.4%), unavailability of educational aids (70.1%), and lack of health problems with clinical guidelines (57.5%) were the frequent challenges facing the trainees. Significantly, trainees in their fourth academic year faced these challenges the most (p-value less than 0.05), while trainees' gender and age showed an insignificant relationship to challenges (p-value more than 0.05). Trainees suggested many interventions related to the training program and to practical training to improve the Family Medicine Postgraduate Training Program.

**Conclusion:** Family Medicine trainees emphasized the challenges they faced and the interventions they suggested solving these challenges. These solutions were significant to produce a competent and skilled generation able to meet the community health needs.

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## Introduction

Globally, successful health system indicators depend on the delivery of comprehensive healthcare services based on community needs. [1] Family physicians are the first-line care providers who provide comprehensive, accessible, and affordable healthcare services to the community in primary healthcare centres. [2, 3] Their role focused on treating, screening, and preventing common medical disorders and chronic illnesses among citizens. [4] As well as having managerial roles in the health centers, they trained to have good communication, leadership, and management skills. Therefore, the Family Medicine Postgraduate Program should properly address all the required competencies.

On the other hand, the improvement of any program depends on the quality check of all program dimensions: trainers, trainees, and training resources. Trainees are the core beneficiaries of the training, as the training program is established for their development. Their perspectives on training are value considerations; [5] their success and acquiring the skills depend on the training resources and environment. [6]

Several challenges face family medicine programs even in developed countries and rich Arab countries like Saudi Arabia. [7, 8] Sufficient resources for postgraduate training programs in developing countries are challenging and addressed in many studies. [9, 10] To scale up the Family Medicine Training Postgraduate Program, it requires addressing all deficiencies. It's important to have well-skilled and competent trainers, [11, 12] program governance documents, an information and management system, training resources, [13] well-equipped practical training sites, [14], and even Internet access. [15] Therefore, it's important to conduct periodic program evaluations and interventional actions to improve the learning environment of the Family Medicine Program [16].

In Sudan, the Family Medicine Postgraduate Program includes two training programs: a two-year training program that ends with a master's degree certificate and a four-year training program that ends with a clinical medical doctorate in Family Medicine. [17] In Sudan, limited updated evidence addressed

the challenges faced by the Family Medicine Program in their practical training since its establishment. Therefore, this study was conducted to study the challenging pattern and possible solution facing the practical training in family medicine. The study will produce comprehensive feedback that highlights the frequent obstacles faced by the trainees during their practical training.

## Materials and Methods

The study was a cross-sectional and facility-based study for 6 months from March 2023 to September 2023. The study took place at a postgraduate medical educational institute in Khartoum city. The Family Medicine Council provides a degree of medical doctorate in family medicine. Trainees who enrolled in the Family Medicine Program and were willing to participate were investigated. The study included the trainees who started the practical training in the referral primary health centres as part of their training program. Using simple random sampling techniques and the Solven formula to determine the sample size. [n = N/ 1+N (e)2, where n is the sample size. N is the population size, and E refers to the margin of error (it is 5%). Power Analysis and sample size (PASS) software was used to calculate the sample size. Data was normally distributed using the Kolmogorov-Smirnov test. A total of 253 trainees who enrolled in the Family Medicine Training Program were selected as a sample group. The study included trainees of any age, both sexes, who started the practical training in referral primary health care centres as part of their studies in the Sudan Medical Specialization Board family medicine program (they spent 18 months of their training period). The study excluded trainees enrolled in the Sudan Medical Specialization Board family medicine program who did not start the practical training or received practical training only in the hospitals. In a period of ten weeks, data was collected using structured questionnaires that included two open-ended questions. Face-to-face self-reporting techniques were applied in data collection to fill out the questionnaires. The questionnaires included three parts: trainees' sociodemographic characteristics, challenges faced by the trainees in practical training in primary healthcare centers and their suggestions to improve the family medicine program in the future. The study questionnaires underwent piloting, the test-retest study was conducted with 30 participants. These questionnaires were not included in the study, the internal consistency of the tool was assessed using Cronbach's alpha, which yielded a coefficient of 0.83. This indicates good internal consistency. To examine content validity, the tool was reviewed by three experts in the field, who rated the items as 91%. The tool demonstrated convergent validity with other similar tools in literature ($r > 0.7$) and discriminant validity ($r = 0.89$). Written informed consents were requested from trainees before they filled the questionnaires. Additionally, the purpose of the study was explained clearly to the trainees.

Statistical Package for Social Sciences version 24 was used for quantitative data analysis. Bivariate analysis was performed to find the relationship between the variables, Pearson chi-square test was used to compare the statistical difference between the variables. A significant finding was considered when the P value $< 0.05$. The last part of the questionnaire was an open-ended question. Thematic analysis was performed to analyze the trainees' suggestions to improve the Family Medicine Program. Ethical approval was obtained from the Institutional Review Board (IRB) dated March 1st, 2023, and informed written consent was taken from all participants in the study. Additionally, Ethical clearance was obtained from the Ethical Committee. Collected data confidentiality and security were considered throughout the study.

## Results

Two hundred and fifty-four trainees in the Family Medicine Program were studied, 222 (87.4%) of the trainees were females and 32 (12.6%) of them were males. Male to female ratio was 1: 6.9. Among them, 20 (7.9%) trainees were in the age group 20-30 years, 178 (70.1%) of them were in the age group 31 – 40 years and 56 (22%) of them were age more than 40 years. Many of the trainees (168 /66.2%) were in their fourth academic year, (45/17.7%) trainees were in their second academic year and (41/16.1%) of them were in their third academic year. Most of the respondents (108/ 42.5%) had experienced more than 5 years of work in primary healthcare centers, Trainees faced several challenges in their practical training, limit number of trainers (76.4%) was the frequent challenge they faced, then they complained of unavailability of educational aids (70.1%) such as equipped venues with devices and supplies for tutorials, discussion and cases presentation and lack of health problems clinical guidelines (57.5%). These challenges were followed by the following challenges: they could not apply the skills, limited teaching capability and teaching skills, unavailability of portfolio, huge number of patients (high flow), short training period, trainers were not committed and always busy, number of patients may be inadequate (low flow) and uncooperative of health centre team members in consequences. Trainees added more challenges; they revealed the unavailability and absence of medical records, referral system, first aid emergency care supplies and equipment in addition to a few numbers of training sites. [Table -1]

**Table 1:** Distribution of the challenges faced Family Medicine trainees in their practical training in primary health care centers **[n=254]**

| Challenges | N (%) | | Total |
|---|---|---|---|
| | Faced | Not faced | |
| Limit number of trainers | 194 (76.4) | 60 (23.6) | 254 (100) |
| Unavailability of educational aids | 178 (70.1) | 76 (29.9) | |
| Lack of clinical guidelines for health problems | 146 (57.5) | 108 (42.5) | |
| I cannot apply the skills | 142 (55.9) | 112 (44.1) | |
| Limit teaching capability and teaching skills | 138 (54.3) | 116 (45.7) | |
| Unavailability of portfolio | 136 (53.5) | 118 (46.5) | |
| Huge number of patients (high flow) | 120 (47.2) | 134 (52.8) | |
| Short training period | 108 (42.5) | 146 (57.5) | |
| Trainers were not committed and always busy | 90 (35.4) | 164 (64.6) | |
| Number of patients may be inadequate (low flow) | 58 (22.8) | 196 (77.2) | |
| Uncooperative of health center team members | 52 (20.5) | 202 (79.5) | |

Bivariate analysis using chi-square was performed to determine the trainee sociodemographic characteristics who faced these challenges. Significantly, the study found senior trainees (enrolled in their fourth academic year) faced a limited number of trainers p=0.011), unavailability of educational aids (p=0.000) and lack of health problems clinical guidelines (p=0.030) more than junior trainees. While the trainees' gender and age showed insignificant relation with the practical training challenges they mentioned. [Table 2, 3,4]

**Table 2:** Correlation between the trainees who faced limit number of trainers and their sociodemographic data **[n=254]**

| Sociodemographic data | | Limit number of trainers | | | P value |
|---|---|---|---|---|---|
| | | Faced | Not faced it | Total | |
| **Gender** | Female | **178** | 44 | 222 | 0.061 |
| | Male | 16 | 16 | 32 | |
| | Total | 194 | 60 | 254 | |
| **Age** | 20-30 years | 11 | 9 | 20 | 0.123 |
| | 31 – 40 years | **164** | 14 | 178 | |
| | more than 40 | 19 | 37 | 56 | |
| | Total | 194 | 06 | 254 | |
| **Academic year** | R2 | 27 | 18 | 45 | 0.011** |
| | R3 | 22 | 19 | 41 | |
| | R 4 | **145** | 23 | 168 | |
| | Total | 194 | 06 | 254 | |
| ** significant | | | | | |

**Table 3:** Correlation between the trainees who faced unavailability of educational aids and their sociodemographic data **[n=254]**

| Sociodemographic data | | Unavailability of educational aids | | | P value |
|---|---|---|---|---|---|
| | | Faced | Not faced it | Total | |
| **Gender** | Female | **160** | 62 | 222 | 0.151 |
| | Male | 18 | 14 | 32 | |
| | Total | 178 | 76 | 254 | |
| **Age** | 20-30 years | 14 | 6 | 20 | 0.071 |
| | 31 – 40 years | **143** | 35 | 178 | |
| | more than 40 | 21 | 35 | 56 | |
| | Total | 178 | 76 | 254 | |
| **Academic year** | R2 | 32 | 13 | 45 | 0.000** |
| | R3 | 29 | 12 | 41 | |
| | R 4 | **117** | 51 | 168 | |
| | Total | 178 | 76 | 254 | |
| ** significant | | | | | |

**Table 4:** Correlation between the trainees who faced lack of clinical guidelines for health problems and their sociodemographic data **[n=254]**

| Sociodemographic data | | Lack of clinical guidelines for health problems | | | P value |
|---|---|---|---|---|---|
| | | Faced | Not faced it | Total | |
| **Gender** | Female | **146** | 76 | 222 | 0.122 |
| | Male | 0 | 32 | 32 | |
| | Total | 146 | 108 | 254 | |
| **Age** | 20-30 years | 10 | 10 | 20 | 0.053 |
| | 31 – 40 years | **115** | 63 | 178 | |
| | more than 40 | 21 | 35 | 56 | |
| | Total | 146 | 108 | 254 | |
| **Academic year** | R2 | 23 | 22 | 45 | 0.030** |
| | R3 | 22 | 19 | 41 | |
| | R 4 | **101** | 67 | 168 | |
| | Total | 146 | 108 | 254 | |

The studied trainees suggested several interventions to improve the family medicine program. The interventions were analyzed and categorized into three themes: interventions related to the training program, interventions related to practical training and the student's thesis interventions. Intervention details are revealed in [Table 5]. Although students' thesis was not part of practical training in primary health care centers, many trainees in the family medicine programs faced a lot of constraints related to their thesis.

## Discussion

Trainees are the coming generation of family doctors; they will be the key persons who provide primary healthcare services. They need to be safe skilled and competent doctors. In the current study females were predominant. Alahmadi's [16] study found similar results, while Toma's [6] study showed contra results. In this study, most of the trainees were in their fourth academic year. Significantly, trainees in their fourth academic year faced challenges in their practical training more than the trainees in other academic years. Senior trainees completed the practical training in teaching hospitals and many primary healthcare centers, and they are able to address the challenges they faced during training. Nevertheless, trainees' gender and age showed insignificant relation with practical training challenges. It means trainees faced the same challenges regardless of their age or gender.

In this study, all the studied trainees faced challenges during practical training in primary healthcare centers, however, Alahmadi's [16] study showed only 11.1% of studied trainees faced training problems. Challenges addressed the training process requirements: trainers, training methods, educational resources, and the program management system. The most frequent challenges addressed by trainees were shortage of trainers' number, unavailability of educational aids and lack of clinical guidelines. In literature, Erumeda [9], Erumeda [18] and Al-Khaldi [19] studies showed the same challenges with different frequencies. However, Davies's [20] study added more challenges related to the program in general, which not find in this study.

In this study, trainees suggested many recommendations to improve family medicine programs. The suggestions included interventions related to the training program, training site resources and their students' thesis. Students' thesis was not related to the practical training however it was a common concern among trainees. Trainees in the FM program faced a lot of constraints related to their thesis. It's important to conduct another study focused on student thesis. This study showed Family Medicine trainees faced numerous of challenges in the practical training at primary healthcare centers. These challenges are not insoluble, several interventions should take place to improve the educational quality of the program. Rabbani's study [21] reported findings that differed from our results. Their participants expressed high satisfaction with the program director (>80%) and the overall organization of the training program. While a significant portion of trainees were satisfied with supervision and feedback, a smaller percentage were pleased with evaluations. Consistent with our findings, Rabbani's study also highlighted strong satisfaction with research facilitation and supervision, with 78-86% of trainees expressing approval. On the other hand, Barnard's study [22] conducted with trainees from other medical disciplines, echoed our concerns regarding the thesis requirement for full postgraduate certification. The study emphasized the need for supportive supervision, dedicated time and resources to assist trainees in completing their thesis successfully.

Although the study highlighted the trainees' perceptions and feedback about the practical training, it included some limitations. The study results may include personal biases. Additionally, although participation in this study was optional, the study participants may feel pressure as they received the request to participate from the courses' coordinator and the study principal investigator, which may affect the accuracy of evidence. Therefore, non-anonymized feedback may be the best tool for training evaluation.

## Conclusion

This review underscores the challenges faced by family medicine trainees during practical training in primary healthcare centres. Key obstacles include a limited number of trainers, insufficient educational resources, and a lack of standardized clinical guidelines for common health problems. While these challenges are substantial, they are not insurmountable. To address these issues, several interventions proposed by trainees could be implemented to enhance the training program, improve the quality of practical training, and support trainee thesis development. The Family Medicine Council should take proactive steps to bridge these gaps and increase the overall training experience for trainees. Family medicine program who had not started practical training or who received practical training only in hospitals. Over ten weeks, data was collected using structured questionnaires that included two open-ended questions. Face-to-face self-reporting techniques were employed in collecting data to fill out the questionnaires. The questionnaires consisted of three parts: trainees' sociodemographic characteristics, challenges faced by trainees in practical training in primary healthcare centers, and suggestions to improve the family medicine program in the future. The study questionnaires underwent piloting; a test-retest study was conducted with 30 participants, who were not included in the final study. The internal consistency of the tool was assessed using Cronbach's alpha, which yielded a coefficient of 0.83, indicating good reliability.

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