

Evaluation of dermatology curriculum of Sudan medical specialization board: 2017-2018

Abstract

Background: Evaluation of any curriculum in medical education helps the process of health profession education by providing valuable feedback to the programs in which the graduates train.

Methods: This was a descriptive cross-sectional study conducted by observing and systematically documenting the ongoing performance of trainees in real clinical settings over a 6 months' period from July 2017 to January 2018. The aim of this study was to evaluate the dermatology curriculum of Sudan Medical Specialization Board (SMSB) and to gather data that will help in identifying areas in need of improvement or change. The data was collected through structured questionnaires from three groups: 1) trainees, 2) patients and 3) trainers.

Results: The study included 128 trainees, 178 patients and 22 trainers. The patient's satisfaction rate with the medical care provided by dermatology doctors was high since 61.8% stated that they had an excellent care. The overall trainee's satisfaction of the provided program was reported in 89.2%. The majority of trainers believe that the current curriculum is not updated and is not well implemented in the training. Trainers clearly stated that the number of trainees per batch participated in the program and the number of training centres are inadequate. They also raised their concerns that the current training program didn't meet the desired outcomes.

Conclusions: This study provides a general picture of dermatology postgraduate training in Sudan from different perspectives. In our evaluation of the SMSB dermatology curriculum, we found a well-developed program, with a good curriculum but poor implementation, leading to an unsatisfactory outcome.

Keywords: curriculum, dermatology, evaluation, education, sudan

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Abbreviations: SMSB, sudan medical specialization board; SMSC, sudan medical specialization council

Introduction

Evaluation of any curriculum in medical education helps the process of health profession education by providing valuable feedback to the programs in which the graduates train.^{1,2} Curriculum development process undergoes transformation due to newer developments in education and its evaluation keeps it valid, reliable and keeps it in the right direction.^{3,4} Therefore, the needs to organize the curriculum development process in such a way which should prepare young generation for pursuing higher education as well as to make them able to adjust with their practical life meaning fully and productively are necessary. The purpose of curriculum evaluation is to determine whether or not the newly adopted curriculum is producing the intended results and meeting the objectives that it has set forth, and it is an essential component in the process of adopting and implementing any new curriculum in any educational setting. Another purpose of curriculum evaluation is to gather data that will help in identifying areas in need of improvement or change.^{3,5}

The pointers for actual curriculum improvement signify functioning features that any multifaceted association must have in order to be receptive and accountable to its customers. Additional, the measurement can be focused on to meet the requirements of any institution constituency from big to minor and it can emphasis on a precise assessment of a ward's syllabus area. Two types of evaluation

are included in the Phases and Steps illustration: Formative delivers response throughout the procedure of emerging the curriculum, and² Summative replies queries around alterations (influence) that have happened in learners owing to their knowledge skills. Collective assessment offers indication for what works, what does not work, and what desires to be enriched.

Curriculum assessment is an essential and significant feature of any learning system. It delivers the foundation for curriculum policy choices, for feedback on continuous curriculum modifications and methods of syllabus implementation.

Sudan Medical Specialization Board dermatology curriculum has never been evaluated. The present study reflecting the current situation of dermatology curriculum and its implementation from different prospective. Our purpose was to provide comprehensive data regarding the curriculum, training and their impact on health services. In the hope of these data will assist dermatology residency program with evaluation of their current curriculum.^{6,7}

Methods

Study design and data collection

This was a descriptive cross-sectional study conducted by observing and systematically documenting the ongoing performance of trainees in real clinical settings during a specific period of training over a 6 months' period from July 2017 to January 2018. The aim of this study was to evaluate the dermatology curriculum of SMSB

and to gather data that will help in identifying areas in need of improvement or change. The data was collected through structured questionnaires from three groups: 1) trainees, 2) patient's feedback in Khartoum Teaching Hospital of Dermatology and Venereology; Ribat University Hospital, Khartoum and Military Dermatology Hospital, Omdurman, Sudan and 3) trainer's feedback, Sudan Medical Specialization Council, Sudan. All questions were designed based on related literature; main features of the curriculum development process evaluation were kept in view while designing the questionnaires to patients, trainees and trainers. The questionnaires and checklists were validated through opinions of expert personnel working at education and development centre of SMSB. Ralph Tyler (1950) curriculum evaluation model was used in the current study⁷ which include the following steps: I) behavioural objectives which should specify both the content of learning and the student behaviour expected, II) the situations that will give the student the opportunity to express the behaviour embodied in the objective and that evoke or encourage this behaviour, III) Selection, modification, or construction suitable evaluation instruments, and check the instruments for objectivity, reliability, and validity, IV) Use the instruments to obtain summarized or appraised results, V) Comparison of the results obtained from several instruments before and after given periods in order to estimate the amount of change taking place, VI) Analysis of the results in order to determine strengths and weaknesses of the curriculum and to identify possible explanations about the reason for this particular pattern of strengths and weaknesses and VII) Use the results to make the necessary modifications in the curriculum.

Programme development

The Sudan Medical Specialization Council (SMSC) was established in the year 1995 when an acute necessity was felt for local post graduate training. At that time the country launched an ambitious program to promote health services and under graduate medical education. Because post graduate medical training abroad was becoming more expensive and less available for Sudanese, the establishment of an affordable program in Sudan was inevitable.⁸ Dermatology along with medicine, surgery, obstetrics and gynaecology and paediatrics were the first councils to be inaugurated in Sudan Medical Specialization Board (SMSB), where a two years' program was worked out, and the awarded certificate was membership in dermatology SMSC. A few years later, the board realized that this was not enough and introduced an upgraded and updated three years' program; the degree awarded became a Fellowship of SMSC Dermatology. Later with the development of the SMSB, it became apparent that a further upgrading is necessary. The board increased the content and the duration of the program, which became four years MD program.⁸ SMSB dermatology curriculum looked into similar curricula in the region and internationally. Use has been made of the recent trends that appeared in those programs specially the Egyptian Fellowship program and the Arab Board Curriculum for Dermatology.⁸

Sample size and sampling techniques

Simple random sampling methods was used, the size of the study was determined through the following formula: $n = \frac{Z^2 \times (p \times q)}{e^2}$ where n = sample size required by the study, Z = the determined area under the normal curve by the desired confidence interval (CI: 95%), p = the proportion of the main attribute of the study (the expected proportion of satisfaction toward dermatological services patients in Sudan (unknown), which was set to 0.5, $q = 1 - p = 0.5$, and e = the

desired precision ($= 0.05$). Since the number of study population known, we adjusted the number of sampled participants through the following formula: $n_0 = \frac{n(1 + N)}{1 + N}$ Where n is the sample size and N is the population size. The estimated population size = 330 patient throughout the daily study duration. Therefore, the calculated sample size was adjusted through the following: $n_{adjusted} = \frac{385}{(1 + ((385 - 1) / 330))} = 177.8 \approx 178$ patients.

For trainees 'sample size we used the same formula for the estimation of patients' sample size. The estimated population size for trainees throughout the study duration = 159. Thus, the calculated sample size was adjusted to 113 trainees according to the formula: $n_{adjusted} = \frac{385}{(1 + ((385 - 1) / 159))} = 112.7 \approx 113$ trainees. Total coverage of 22 trainers from dermatology council members, who were available during the study period were selected.

Data analysis

The data collected from the questionnaires was analysed quantitatively and qualitatively. Quantitative Data Analysis: Data from the close-ended questions from questionnaires were used for the quantitative analysis as follows: Data was entered, cleaned, and analysed using SPSS version 22.0, with descriptive statistics in term of frequency and percentages. Qualitative Data Analysis: This included open-ended questions and participants' comments in above mentioned questionnaires. The qualitative data was analysed by Thematic Analysis involving the following stages: 1) Familiarization: by reading the transcript and making a brief note in the margin about the nature of the information we noticed, 2) Transcription: on qualitative parts of the questionnaire, 3) Identifying themes: reading the transcript then listing the items (categorize) them, 4) Coding: the process of applying the thematic framework to the data, using numerical or textual codes to identify specific pieces of data which correspond to different themes, 5) Charting: using headings from the themes to create charts for the data and 6) Mapping and Interpretation.

Ethical consideration

All ethical principles were considered and secured, the privacy and confidentiality of the study participant, their consents (informed written consent) for being part of this study were taken. The data was stored and registered in a standardized way and locked. Furthermore, the research containing all data was approved by the technical, ethical committee of the Dermatology Council, SMSB.

Results

Baseline characteristics of the participants

Among the total 178 investigated patients from the three main hospitals of dermatology in Khartoum state, Sudan, 99 (55.6%) were female and 79 (44.4%) were male. Their age ranged between 14 years to 59 years with mean (SD) 36.4 (2.3). Approximately one half (50.6%) were of rural residence and more than one half were not educated (62.1%) and skill workers (59.4%). A total of 128 trainees indicated that they were in batches 29, 30, 31, 32, 33, 34, and 35 were involved in this study. We received complete response from twenty-two trainers, fifteen of them were working at teaching hospitals, five at universities and two in private clinics. These trainers earned different qualifications through their career. Fifteen trainers earned their degrees in Sudan, five in Egypt, one in Austria and one in Russia.

Results related to the behavioural objectives

With regard to the overall patients' satisfaction with the medical care provided by the doctors, 70.2% of the patients stated that the overall doctors' behaviour was excellent, this evaluation involved time given by doctors to patients, clinical examination, explanation of the disease and the explanation of the use of the prescribed treatment, table 1. Specific concerns were expressed about the trainees' responsibilities for inpatients care, 19.5% stated that the level of responsibility for in-patient care was over their capability. However, 75.8% stated it is within their capability and 4.7% stated it's below their capability. The overall trainee's satisfaction of the provided program was reported in 89.2%. Regarding the implementation of the SMSB dermatology curriculum in training, fifteen out of the twenty-two trainers stated that have used the curriculum as a guide in training while seven did not rely on it. Among these seven trainers, six used other curricula while one trainer relied on his personal experience. The majority of trainers believe that the current curriculum is not updated and is not well implemented in the training. Trainers clearly stated that the number of trainees per batch participated in the program and the number of training centres are inadequate. They also raised their concerns that the current training program didn't meet the desired outcomes.

Table 1 distribution of the study participants – patients - according to their satisfaction toward the services provided (n=178).

Area of satisfaction	Categories	No.	Percentage
Overall satisfaction from the services provided by the doctor	Excellent	110	61.8
	Good	45	25.3
	Average	21	11.8
	Less than average	1	0.6
	Bad	1	0.6
Doctor response	Excellent	125	70.2
	Good	43	24.2
	Average	8	4.5
	Less than average	1	0.6
Time spent with the doctor	Bad	1	0.6
	Enough	166	93.3
	Not enough	12	6.7
Complete clinical check	Yes	153	86.0
	No	25	14.0
The status was fully explained by the doctor	Yes	141	79.2
	No	37	20.8
The treatment was fully explained by the doctor	Yes	172	96.6
	No	6	3.4

Results related to the curriculum instruments and their availability

Regarding the familiarity of trainees with the SMSB curriculum, 45.3% confirmed their familiarity with the provided curriculum table 2. One-third of the respondents (41 out of 128) either possess a hard or a soft copy of the curriculum and 31 out of these trainees used the curriculum as a guide during their training years comparing to 10 who didn't use it at all. More than half of the trainees stated that not all

aspects of dermatology are covered by the SMSB curriculum, table 2. Regarding the implementation of the curriculum, only 17.2% of the trainees strongly agreed that it's well implemented.

Table 2 distribution of the study participants – Trainees - according to their responses regarding the curriculum (n=128).

Curriculum	Categories	No.	Percentage
Familiar with SMSB dermatology curriculum	Yes	58	45.3
	No	70	54.7
Was Soft/hard of SMSB dermatology curriculum at start of training provided?	Yes	41	32.0
	No	87	68.0
If yes, did you use it as guide during training years (n=41)	Yes	31	75.6
	No	10	24.4
Think the curriculum cover all aspects of dermatology	Yes	57	44.5
	No	71	55.5
Aspects not covered (n=71)	Venereology	2	2.8
	Clinical	5	7.0
	Cosmetology	2	2.8
	Dermato-pathology	1	1.4
	Laser techniques	5	7.0
	Tumours	1	1.4
	Strongly agree	22	17.2
The curriculum is well implemented	Agree	43	33.6
	Disagree	42	32.8
	Strongly disagree	21	16.4

Data was shown as number and percentage as applicable.

When we asked about the daily workload, 57.7% stated that it was high comparing to only 3.9% who stated it was low. When trainees were asked whether the admitted cases were sufficient and suitable for teaching and learning purposes, 91.4% of the respondents reported that they were, whereas only 8.6% of respondents considered them unsuitable.

Data related to the use of the instruments to obtain summarized or appraised results

When the participants were asked whether they filled the evaluation sheet to reflect their opinions at the end of their shifts, the majority stated that they did not fill it and only 18 participants filled the evaluation sheet provided. Among the 110 participants, who didn't fill the aforementioned evaluation sheet, 83 trainees didn't know there's such evaluation while 12 trainees didn't think that their opinion will make any difference. Regarding the trainees' evaluation of certain aspects of the training provided, the majority believe the overall training program is a poor program. They graded

the clinical lectures as good, clinical meetings quality as poor and the opportunity to acquire skills as fair. They also stated that both the training environment and the quality of teaching during training were poor. However, the availability of consultants and supervision were both graded as good by the majority of respondents.

Qualitative Results

Qualitative data include trainee comments and some observations of trainers. Trainees evaluated their training program including clinical rotations and lectures. On the other hand, trainers evaluated the training program outcome. Trainee had several comments regarding their training program. These comments were documented and analysed according to the following themes: 1) Training program curriculum: Respondents illustrated that the dermatology training program curriculum needs to be reorganized and updated, by adding additional topics and activities. The proposed changes serve to create a more efficient training program that can be valued by participants. A student said: "Curriculum should be updated to cover all areas of dermatology". On other hand, students thought the curriculum and teaching methods updated to encourage them to do researches and publications. They highlighted the inadequately covered and absence modules in the curriculum; dermatopathology, cosmetology (Botox, fillers, etc.). Some respondents said: "we have old style program, we need to study all the training dimensions like cosmetics." 2) Coordination of the training: The program needs more coordination among different levels; between the trainers and trainee and between the Dermatology Council and trainers. Regarding this issue, the respondents stressed on the mismanagement of the program, absence of clear annual plans for training in addition to training's annual calendar for each shift. A student mentioned: "I think the first year lectures are not of benefits, I advise to start clinical and lectures on the same time from the start, but it is difficult to raise your idea, the students, trainers and the board were separated". Many trainees suggested putting some courses online and having a dermatology board website to follow the syllabus, news and better communication. 3) Teaching methods: Lectures are used to convey critical information. In this study, it was predicted that students' perception of lectures would significantly predict as the most efficient teaching method with minimal comments; they wanted more clinical lectures, more activities. In the questionnaire, they requested to increase the clinical meetings in term of quantity and quality to improve the clinical teaching, perform proper history investigation and examination for patients, enrich cases discussions, and to add Journal club to the program. All respondents preferred to increase the clinical rounds and lectures, trainee mentioned: "Both lectures and tutorials are needed". Another gap illustrated was the training sites. The study respondents pointed to a limitation in the number and capacity of training sites, as well as a growing number of trainees. A student stated: "Need more centres for training because of the high number of trainees", someone said: "In the outpatient clinic, the number of patients seen make it difficult to benefit from the teaching we received." However, some trainees pointed that recently there is an improvement in the training program; they had more lectures and more clinical rounds than the previous batches. 4) Trainers: Trainees raised the concern about the lack of expert and skilled trainers, which is a major challenge that faces the program and pointed out by several trainees. One trainee mentioned: "The availability of doctors and lectures is a major problem in the program". During clinical rounds and thesis writing, they need more supportive supervision and guidance.

Analysis of Trainer's Responses According to our questionnaire, trainers can be divided into two categories, trainers who did not follow the dermatology curriculum of SMSB and trainers who followed the dermatology curriculum of SMSB. The trainers who did not follow the SMSB dermatology curriculum used different teaching approaches. Some of them relied on the use of other international curricula and some preferred to rely on their personal experiences in teaching rather than relying on any national or international curricula. A trainer said: "I use my general experiences in teaching." 1. Curriculum aspect that needed to be updated: Trainers stressed in this study on the missed and not fully covered parts in the available curriculum. They believe that the following modules should be parts of the training program: a) Cosmetic dermatology and laser module. b) Paediatric dermatology. c) Dermatopathology. d) Dermatological surgical producers. e) Andrology. f) Phototherapy. g) Theoretical and practical thesis. Additionally, trainers illustrated, it is imperative to update the assessment methods of trainee. 2. Training program meet the desired outcomes: Trainers concluded that the factors influence the current training program for not meeting the desired outcomes are: a) Program curriculum: They highlighted the gap in the curriculum appliance; existing curriculum was disorganized with limited teaching time. Moreover, the curriculum needs to be updated with new and advanced dermatology modules. The current curriculum reflected in students'/candidates assessment were weak in some aspect of dermatology. Some trainers stated: "The students need more training in advanced dermatological branches (i.e., laser, cosmetology, andrology, surgical methods)", and also mentioned that many areas have to be covered such as laser treatments, histopathology, etc. b) Teaching methods: Teaching methods are the methods used by trainers to enable student learning. These strategies are determined by the subject matter to be taught and by the nature of the students. The teaching method will be appropriate and efficient if it has to be related to the characteristic of the candidates and the studying modules. All respondents suggested that the design and the selection of the teaching methods must take into account not only the nature of the subject matter but also how trainees learn. Several cross-cutting issues mentioned that affects the quality of the teaching, e.g., the lack of resources in training facilities, the weak training in clinical practice and the large number of trainee compared to the number of the training centres. One stated clearly that the training sites are poor. c) Trainers themselves: Trainers are the core bone of this program and in all levels of training programs. Sudan faces a huge shortage in well skilled health workers; they prefer to work abroad due to several factors, and trainers are part of those workers. Accordingly, the program faced a shortage of dermatological consultants in training hospitals. The number of trainers is small compared with the trainee number. Poor financial rewards played a major role in the lack of interest among available trainers. A respondent mentioned: "Number of trainers to conduct the program is not enough" another mentioned: "Trainers are poorly funded, so they are not interesting in training and they could not be obligated to the work." Trainers' interpretation: Trainers finally interpreted with their comments to improve the quality of the training, they recommended increasing the training centres in term of quality (the training resources) and quantity (the number of training sites). Attract more expert trainers and to be involved in teaching. A respondent illustrated: "Dermatology council must increase the number of trainers and facilities to conduct better training, redesign the program to be comprehensive, appropriate and updated." Another area touched was the supportive supervision on practical procedures. Supportive supervision is a facilitative approach

to supervision that promotes mentorship and communication between trainers and trainees.

Discussion

To our knowledge there has been no formal evaluation of the dermatology program in Sudan since its establishment. Evaluation serves as an excellent reference standard for administrators, educators, and certifying bodies to follow in the creation and modification of postgraduate dermatology education curricula.⁷ Our study targeted three main groups that are directly influenced by the program quality. These three groups are patients, trainees, and trainers. Our results showed that patients were highly satisfied with the medical care provided by dermatology doctors, 61.8% rated that they had an excellent medical care from the doctors, which is in line with study conducted in Saudi Arabia where the authors found that dermatology outpatients are satisfied and have positive perceptions and attitudes toward resident participation in the dermatology clinic.⁸ Although 14% of patients in the current study was not examined by their doctors and 20.8% did not get explanations from the doctors about their disease the satisfactory rate was high, this might be due to the fact that most of our participants were not educated enough to be able to recognize the ideal setting.

The second and the most important group in this study were the trainees. Most of the trainees stated that they did not have the curriculum and more than half were not familiar with it. In this study, 55.5% of the trainees stated that the curriculum did not cover all aspects of dermatology. They highlighted the inadequately covered and absent modules in the curriculum. This in contrast to a Canadian study which evaluated the dermatology residency training, in which the majority of trainees were most satisfied with dermatopathology education and least satisfied with cosmetic dermatology.⁹ It worth mentioning that the aforementioned highlighted aspects of uncovered curriculum are included in the SMSB dermatology curriculum document, despite those trainees stated it is not covered. Therefore, considering trainees perceptive in the evaluation process of the curriculum may improve the quality of teaching and learning. Information provided by students can show how well they have achieved, the learning outcomes and their attitudes toward the curriculum and teaching. In general, dermatology trainees conveyed a low level of satisfaction with their training programs with only 13.3% were satisfied. Most trainees stated that the number of patients seen in the outpatient clinic was high compared to the number of trainees, which added a considerable burden. However, the number of patients seen in the outpatient clinic cannot be considered as the main factor of the low satisfaction rate among trainees. Some trainees are working at different training centres, in which the number of patients seen per day is considered either average or low but their satisfaction with provided training program is low. In Jordan which share Sudan some educational environmental factors, 62.3% were dissatisfied,¹⁰ while far away from our environment and in Canada the vast majority 85% of respondents, were satisfied with their residency program.¹¹ Comparing to Canada, we have limited resources and facilities to support our training. The study respondents⁷ pointed to a limitation in the number and capacity of training sites, as well as to the continuous growing number of the trainees, that's beside lack of full time trainers. Moreover, journal clubs are not implemented in training program since 75% of the trainees stated that journal clubs were not available in the training. Journal clubs considered as an integral element of residency training, they lead to a significantly higher confidence in how to critically review literature and present

a manuscript, they also improved the residents' ability to search the literature and their statistical knowledge, skills that are essential in the practice of evidence-based medicine.¹² Almost half of the trainees had a good opportunity to acquire dermatology skills, but there was no supervision according to 12.5%, and 35.9 had poor supervision. Hands-on experience in dermatology is crucial to be a good dermatologist; supportive supervision on practical procedures promotes mentorship and communication between trainers and trainees, and ensures that trainees properly acquired practical skills. On the other hand, the majority of the trainees did not fill the evaluation sheet of the curriculum. Rotation feedback reports; a questionnaire about the contents, methods of teaching, resources that allows the trainees to evaluate the trainers by the end of each shift, are considered as one of the important continuous evaluation methods.¹³ With regard to the third group of the respondents (Trainers), Distribution of curriculum document among trainers was controversial, there must be clear and strict policies for the training processes to ensure that all trainees acquired all competencies that needed to achieve the desired outcome by the end of the training program. The value and the importance of the trainers' personal experiences are undebatable, but they should not be the only core that trainer depends on. The combination of a well-structured update curriculum and trainer's personnel experience will have a great impact on the improvement of the training program and help the trainees to get a consistent adequate training.¹⁴⁻¹⁶ Trainers have a low satisfactory rate of the training; they raised their concerns that trainees are not committed to the training program. They pointed out that in order to acquire all desired competencies trainees must be dedicated to the training program, trainees must have been encouraging to be more adherent to the program, and there must be restricted policies regarding trainee's adherence. Regarding the number of training centres, the majority of trainers agreed that the available number of training centres is insufficient for the number of trainees that continuously increase, which directly impact the quality of the training. This observation is in high agreement with what the trainees stated.

Medical education literature described the process of curriculum evaluation using quantitative and qualitative methods, most of them reported information obtained from educators' point of view and less attention paid to students' perspective.^{17,18} This study is expected to be a base for more change and improvement in medical education in Sudan.

Limitations

One of major limitation of this study as it was relied on *Ralph Tyler* curriculum evaluation model, the curriculum objectives were not evaluated and the study did not provide standards or suggest how standards should be developed.

Conclusions

This study provides a general picture of dermatology postgraduate training in Sudan from different perspectives. The data were intended to assist dermatology program directors with evaluation, development, and improvement of their curriculum by serving as a reference point to gauge future trends. In our evaluation of the SMSB dermatology curriculum and its effect on the quality of the training program, we found out that the current program provided is well-developed, with a good curriculum but poor implementation. That's why the current program did not meet the expectation of both trainees and trainers.

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Conflicts of interest

The authors declare that they have no competing interests.

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