Evaluation of Saudi family medicine training program: The application of CIPP evaluation format

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Abstract

The Saudi Diploma in Family Medicine (SDFM) was enacted in 2007 to fulfill the needs of qualified Primary Health Care providers in Saudi Arabia. Evaluation is not only an integral process for designing educational training programs, but an effective evaluation strategy that helps achieve program objectives and enhances the quality of learning objectives: (1) Construct a self-administered questionnaire based on *Context, input, process and product* (CIPP) format to seek trainees' perceptions about the SDFM program; (2) identify the strengths and weaknesses of the SDFM program in relation to the learning outcomes; and (3) define the main obstacles to achieve the outcomes. A self-administered questionnaire was designed based on the CIPP evaluation format after. its validity and reliability were tested through piloting. Then, all the SDFM program trainees were included. The study response rate was 91.2%. More than 77% of the trainees stated that they had achieved the program objectives; a significant difference was found among Saudis and non-Saudis ($p = 0.002$). The training period was reported by 84% as a main barrier to achieve the program objectives, particularly the hospital rotation period. Results indicate an overall satisfaction with the training objectives and the teaching methods used. These findings can be useful for the policy makers to implement the suggested recommendations and deal with obstacles to improve the SDFM program in order to provide effective and efficient primary care services.

Introduction

Family medicine has been recognized as an essential specialty to improve the quality of Primary Health Care (PHC) physicians worldwide (Ssenyonga & Serenga 2007; WHO 2008). The family practice has expanded dramatically over the past several years and has become competitive to PHC (Stevens 2001). PHC services by the Ministry of Health (MOH) are provided through 19,886 health centers distributed all over the country, which are served by 5566 doctors out of a total of 22,638 doctors in Saudi Arabia (MOH 2008).

The Saudi Diploma Family Medicine (SDFM) Program is a relatively new training program initiated in 2007 to fulfill the needs of qualified PHC providers. This postgraduate residency training program includes theoretical courses, family medicine clinic rotation and a mandatory hospital clinics rotation. The program is aimed at improving the PHC physicians' competencies, which are essentially required to improve the quality of PHC in Saudi Arabia (SCHS 2007). Thus, there is an essential need to explore the strengths and weaknesses of this program for the policy makers in order to further improve the SDFM program through a designed format.

The program evaluation is required to assess its quality to maintain a high quality of the training processes, in the view of rapid change (Green et al. 1998). As Curzon (2004) wrote "an evaluation of this nature is not an optional extra; but it is a key management function, designed to monitor aspects of college output" (p. 199). The CIPP format, corresponding to the letters

Practice points

- The CIPP format is proved to be useful in evaluating Diploma training in family medicine.
- The duration of diploma in family Medicine needs to be revised to ensure the depth and quality of training.
- Proper assessment methods need to be applied to assure the trainee's satisfaction.
- The use of sophisticated technology could be useful in improving trainee's skills.
- The trainee's feedback is important to know the achievement of objectives, identification of barriers and also the better solutions.
- Learning supervision is a fundamental issue in the learning process.

in the acronym CIPP represents assessment of context, input, process, and product of the evaluated program. This model has been well-studied and was found to be valid and accurate to evaluate educational programs (Green et al. 1998; Stufflebeam 2002). It is a comprehensive framework for conducting projects, organizations, and program evaluation (Stufflebeam & Shinkfield 2007).

CIPP program is a type of a "component evaluation" that determines the program's validity by disintegrating it into parts and then evaluating each part separately (Davidson 2005). CIPP is a superior model to study new or complex initiatives

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Table 1. CIPP evaluation framework applied to the family medicine program.			
Evaluation framework (CIPP model)			
Context	Input	Process	Output
Achievement of program goals	Alternative procedural design for:	Process involved in to learning activities	Overall impression about the program
	• Contents	• Trainers	
Barriers to achieve goals, objectives, and needs	• Academic sessions	• Theoretical sessions	Assessment tools
	• Hospital sessions	• Clinical sessions	Enjoyment
	• HDR sessions		Satisfaction

and interactions in medical education research, which helps to identify its strengths and weaknesses with better integrity and applicability of findings (Singh 2004). This study aimed to construct and utilize the CIPP format to explore the trainees' perceptions about the SDFM program.

Methodology

This cross-sectional study was conducted in December 2009. A questionnaire was designed based on the CIPP evaluation format by the researcher.

Evaluated/assessment measurement (Questionnaire)

A questionnaire consists of two parts: the first part takes into account the socio-demographic characteristics. The second part was designed in view of the CIPP evaluation format of the CIPP model as demonstrated in Table 1. It covers all items through 40 questions; 31 quantitative items and 9 qualitative items. The quantitative items were ranked on a five-point rating scale, ranging from completely unfavorable (scoring 1) to completely favorable (scoring 5). The qualitative questions were open-ended questions with provision of space for opinions and suggestions.

Pilot study

A pilot study was conducted to assess the validity of the designed questionnaire (face, content, and construct validity); to tackle the issues of understandability, ease of answering and time required to complete the questionnaire. All the trainees of the SDFM program who graduated in the first batch from the Eastern Province, KSA were recruited for the pilot study (five participants). The questionnaire was distributed through emails. Then, face-to-face interviews were carried out, with the researcher, to clarify the questionnaire items. All the pilot participants' reports and suggestions were incorporated to make the questions more clear.

The final version was administered through email to all trainees of the second batch (34 trainees) who were at the end stage of their training. A total of 2 weeks time was given to send back the filled questionnaires. Those who failed to do were reminded again through emails and telephonic interviews were conducted for clarifications of any queries. The response rate was 91.2%.

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Evaluated program (SDFM)

The SDFM training program is illustrated in Table 2.

Results

Demographic description

A total of 34 trainees were approached, 31 of them responded with a complete questionnaire. There were 70% non-Saudi trainees, from different Arab countries, e.g., Egypt, Sudan, and Syria. The age of the participants ranged from 27 to 51 years with a mean ± standard deviation of 36.1 ± 6.0. Their mean numbers of years of professional service in PHC settings were 7.4 + 6.0 years.

Only one trainee had a postgraduate degree in pediatric medicine and another one had previous training for 6 months in family medicine. The rest had Bachelor's medical degree.

CIPP evaluation format

Context evaluation. About 77.4% of the trainees achieved the program objectives, 94% agreed for clarity of the program objectives and 93.6% reported that the contents were relevant to their needs. A total of 84% agreed that contents met their expectations and they can apply in their practice immediately. Overall, 90.4% rated the contents as valuable.

There was a significant difference between Saudi and non-Saudi trainees; majority of non-Saudi trainees (95.2%) as compared to Saudi (55.6%) reported that their needs were achieved ($p = 0.002$). Similarly, the overall program content was worthy for 95.2% of the non-Saudis compared to 77.8% of Saudis ($p = 0.001$).

The main barrier identified for achieving the program objectives and the trainee's needs was reported to be the shorter length of the program (84%). Other identified barriers were teaching facilities, classroom environment, and library facilities 48.7%, 42%, and 40%, respectively. Teachers' ability to play a helpful supervisor role was found as a barrier by 25.8%. For further barriers which might inhibit achieving the program goals/objectives, suggestions are illustrated in Table 3.

Input, process and product. Table 3 also demonstrates the responses of the trainees regarding input, process, and product evaluation, respectively. Generally, 96.6% of the trainees enjoyed the training program and 90% were very satisfied or satisfied with the program training (Figure 1).

Table 2. SDFM time frame of specialties and rotations duration.

Weeks	1–8	9–16	17–24	25–32	33–36	37–42	43–50	51–52
Duration	8 weeks	8 weeks	8 weeks	8 weeks	4 weeks	6 weeks	8 weeks	2 weeks
Rotation	FM 1 (Introduction to FM)	Internal medicine	Pediatrics	ENT Ophthalmology Dermatology Psychiatry	Obstetrics Gynecology	General surgery Orthopedic	FM 2 (FM clinical rotation)	Eid holiday
	1 day FM clinic + HDRC 4 days theory	1 day FM clinic + HDRC 3 days 6 clinics IM 1 day 2 skills sessions	1 day FM clinic + HDRC 3 days 6 clinics pediatrics 1 day 2 skills sessions	1 day FM clinic + HDRC 4 days 2 clinics per each specialty	1 day FM clinic + HDRC 3 days 6 clinics Ob/Gyn 1 day 2 skills sessions	1 day FM clinic + HDRC 3 days 4 clinics surgery 2wo clinics Orthopedic 1 day Two skills sessions	1 day FM clinic + HDRC 3.5 days seven clinics FM 1 day two skills sessions	

Emergency
25 total on-calls on week end
- 12 adults
- 8 pediatrics
- 5 obstetrics

Table 3. CIPP format applying to evaluate the SDFM program.

Questions	Strongly disagree n (%)	Disagree n (%)	Uncertain n (%)	Agree n (%)	Strongly agree n (%)
1. Context evaluation					
1.1 Are the program goals being met?					
Objectives were clearly explained	–	1 (3.2%)	1 (3.2%)	14 (45.2%)	15 (48.4)
Objectives stated were met	–	1 (3.2%)	6 (19.4%)	15 (48.4%)	9 (29%)
Content was relevant to my needs	–	–	1 (3.2%)	12 (38.7%)	18 (58.1%)
Content met my expectations	–	1 (3.2%)	4 (12.9%)	12 (38.7%)	14 (45.2%)
I can apply what I learned in the program immediately	–	1 (3.2%)	4 (12.9%)	12 (38.7%)	14 (45.2%)
Overall I would rate the content as valuable.	–	–	3 (9.6%)	14 (45.2%)	14 (45.2%)
1.2. Barriers for achieving the program goals					
Classroom environment	7 (22.6%)	7 (22.6%)	4 (12.9%)	7 (22.6%)	6 (19.4%)
Teaching facilities, e.g., instruction materials	6 (19.4%)	1 (3.2%)	3 (9.7%)	8 (25.8%)	4 (12.9%)
Teacher's ability to play a helpful supervisor's Role	8 (25.8%)	1 (3.2%)	4 (12.9%)	4 (12.9%)	4 (12.9%)
Library resources	5 (16.1%)	4 (12.9%)	8 (25.8)	6 (19.4%)	6 (19.4%)
A short training period	–	1 (3.2%)	4 (12.9%)	12 (38.7%)	15 (45.2%)

Any further barriers which might inhibit achieving the program goals/objectives and suggestions (if any)

– Short-training period especially in the hospital rotations
– Skill lab is needed
– Audiovisual equipments needed for recording role-play, pt-consultation
– Supervision should be provided in the Hospital rotation
– Hospital departments are not aware of the program's goals/objectives
– Regular meeting should be scheduled with program director for discuss the obstacles and suggest solutions.

2. Input evaluation (alternative procedural design)

Questions	Explanations and opinions
If the content was not relevant to you as FP or *Not* meet your aims, *please explain*: Write down any specific comments about *FM-1 Sessions*: Current status and suggestions for improvement to meet your needs	– FM-1 courses are condensed in a short period – Topics that more relevant to the hospital departments, e.g., anemia, pneumonia, etc., could be postponed there – Helpful, coordinated and holistic information about family medicine topics – Topics were numerous, condensed and crowded – Needs more well-prepared trainers who able to create a healthy learning environment – Increase the clinical skills sessions – Provide well-prepared classrooms with audiovisual equipments – Outside lecturers should be contacted ahead of time for better arrangement and be aware about the program goals
Write down any comments about the *Hospital Rotations* and suggestions for improvement to meet your needs	– Distribute the FM1 topics throughout the training period will allow longer learning period – Give more weight for topics which are relevant to FM Specialty, ambulatory care – All hospital rotations need to extend their training period – In some rotations, there are no teaching sessions, no supervision – The program goals should be demonstrated to the hospital staff who are involving in the teaching process – Need a FM coordinator in every specialty as facilitator to meet the needs
Write down any comments about the *HDR sessions* and Suggestions for improvement to meet your needs as FP	– Useful and interesting especially presentations that prepared by trainees – It helps to built self-confidence and knowledge but, there were too many presentations – Skill lab is needed – The activities must be reviewed, modified by the supervisor before presentation for high quality materials – It should contain some skill sessions and given more time for discussion – Trainees should have the right to choose the HDRC topics – Sessions should be in the morning time for better attention span
What suggestions do you have to improve the *SDFM program training process?*	– Program content be reduced or extend the training period, i.e., 2 years – Number of the trainees and the trainers should be increased – Skill lab should be conducted with coordination – Trainees who are interested to complete their postgraduate training should be given a chance to join Saudi Board, i.e., R2 level – Increase the emergency duties and share on call duties in all rotations – Arrange more time for training on OSCE-related subjects – In hospital, training should be under supervision of aware consultants

3. Process evaluation

3.1. Instructors (trainers)

Sub-questions	Strongly disagree n (%)	Disagree n (%)	Uncertain n (%)	Agree n (%)	Strongly agree n (%)
Organized	–	–	4 (12.9%)	8 (25.8%)	19 (61.3%)
Knowledgeable	–	1 (3.2%)	3 (9.7%)	8 (25.8%)	19 (61.3%)
Have good training skills	–	1 (3.2%)	1 (3.2%)	13 (41.9%)	16 (51.6%)
Answered questions effectively	–	–	2 (6.5%)	12 (38.7%)	17 (54.8%)
Overall rate they are effective teachers	–	–	2 (6.5%)	11 (35.5%)	18 (58.0%)

Provide comments about *instructors*, their abilities as teacher, communicator, facilitator…. etc.
– Majority were helpful, well oriented, and knowledgeable, with good relationship
– Some need to more cooperative to enhance the learning process
– Teachers number is few which affects the supervision task
– Need to provide more supervision duties in the FM Clinics

3.2. Illustrated/theoretical teaching sessions?

Sub-questions	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
FM-1 topics are relevant to your needs as FP	–	1 (3.3%)	1 (3.3%)	8 (25.7%)	21 (67.7%)
HDR activities are relevant?	1 (3.3%)	–	5 (16.7%)	12 (40%)	12 (40%)
Content of HDR activities is interesting?	1 (3.3%)	1 (3.3%)	2 (6.6%)	15(48.4%)	12 (38.7%)
Were you asked to prepare HDR activities	–	–	1 (3.3%)	7 (22.6%)	23 (74.2%)

3.3. Clinical teaching sessions

Questions	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Clinics availability in family practice	1 (3.3%)	2 (6.7%)	12 (40%)	12 (40%)	3 (10%)
Useful cases for learning	–	1 (3.4%)	6 (20.7%)	15(51.7%)	7 (24.2%)
FM consultant's supervision	–	2 (6.7%)	4 (13.3)	10 (33.3%)	14 (46.7%)
Opportunities to discuss cases with FM consultants?	–	1 (3.3%)	8 (26.7%)	10(33.3%)	11 (36.7%)
Adequate time for Hospital Rotation	7 (22.6%)	6 (19.4%)	15 (48.4%)	2 (6.5%)	1 (3.2%)

4. Product evaluation

4.1. Assessment tool used

Type		Log-book Portfolio			Most of them None
Usefulness	Very useful 8 (27.6%)	Useful 13(44.8%)	To some extent 5 (17.2%)		Not useful 3 (10.3%)
Is it reviewed by your supervisor	Regularly 18 (62.1%)	Irregular reviewed 6 (20.7%)	Just submitted 4 (13.8%)		Not submitted 1 (3.4%)

4.2. Overall impression about the training program

Questions	Strongly disagree n (%)	Disagree n (%)	Uncertain n (%)	Agree n (%)	Strongly agree n (%)
Do you feel the training sessions were useful	–	1 (3.3%)	1 (3.3%)	12 (40%)	16 (53.3%)

What were the most *useful things* that you had learned in the SDFM program?
– Communication skills: Pt-central approach, ICE technique, Dr–Pt relationship, and Bio-psycho-social approach
– Updated knowledge based on EBM
– To be a cooperative with others in a health team-work
– Developing effective presentation skills
– Share experiences with the supervisors and colleagues
– Understand the concept and job description of family physician
– Diagnose and manage chronic diseases in the view of FM
– Disease prevention and health promotion
– Attitude improvement and self-management
– Become supportive and fulfill others' needs

(*continued*)

Table 3. Continued.

Questions	Strongly disagree n (%)	Disagree n (%)	Uncertain n (%)	Agree n (%)	Strongly agree n (%)
4.3. General comments/suggestions					
1. Those who graduate SDFM program be given an opportunity to continue his/her further training for fellowship in family medicine in Saudi Boards					
2. Extend the SDFM program through a distant learning program, as an alternative process, that we can have more time for learning					
3. In order to promote the PHC services, SDFM should be generalized throughout KSA					
4. Priority to join the training should be given for who are new graduates, have potential to improve the PHC services					

Notes: Dr–Pt, Doctor–Patient; FM, family medicine; FP, family physician; ICE+Idea, concern, expectation; SDFM, Saudi diploma family medicine; PHC, primary health care.
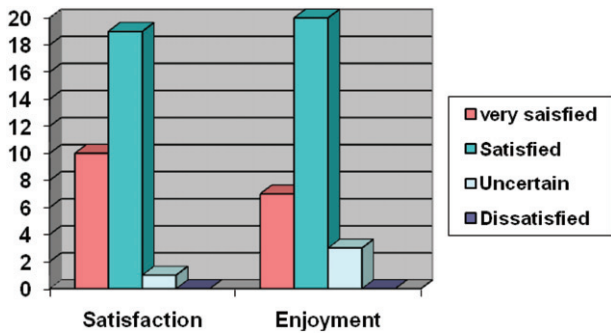
Figure 1. Trainees' level of satisfaction and enjoyment during program training.

Discussion

This is the first nationwide study to evaluate SDFM program enacted in KSA. The results indicate achievement of the overall goals to a large extent with certain barriers. One of the main shortcomings of this training program as highlighted by the trainees is the short training period.

The sample size is considered reasonable related to the size of the program with a high response rate. Moss (1990) had studied only five doctors with six as control. Philip et al. (1996) study only 13 doctors and only 8 trainees were studied in Roscoe and Fisher (2008) evaluation study. Buciuniene et al. (2005), a study in PHC settings with response rate of 78.6%.

Two-thirds of the trainees were non-Saudi, which could be explained by the fact that Diploma degree was not the priority for the Saudi physicians. A higher degree such as a degree conferred by a Board was preferred by the Saudis. Added to that, they appeared to be an apprehension of being unable to have the right to continue their postgraduate study after a Diploma graduation. This is an important issue to be discussed with the decision makers.

CIPP format

This research is a unique attempt to form an innovative framework of CIPP format application for evaluation of family medicine programs. The utility of the CIPP model was described by Malone (1996): Context evaluation leading to informed and contemplated decisions; input evaluation directing structured decisions; process evaluation guiding implemented decisions; and product evaluation serving to recycle decisions.

Context evaluation. Singh (2004) cited it as the first accountability component and provided an opportunity for strengthening the program. The trainees were able to recognize the outcomes of their training. This reflects the importance of exploring the learners' needs and clarifying the program goals to the trainees early in the registration period. Therefore, the trainees should recognize the training outcomes and expectations and hence respond with their needs so as to enhance the achievement of the program's goals and objectives.

Some of the obstacles identified by the trainees were lack of library and classroom facilities, and Skills lab unavailability.

These items are considered by the decision makers for the possibility for providing such information to the training centers.

Trainees need thorough supervision, especially during hospital rotations. As stated by Graham et al. (2007), supervision helps to avoid mistakes, poor practice, and to improve practice-based learning. Moreover, it is also linked with performance improvement (Sox et al. 1998), and a key part of the assessment of any postgraduate training (Rele & Tarrant 2010). Thus, supervision by family consultants either in the family clinics or during hospital rotation seems to be vital for learning facilitation.

Input evaluation. The training period was stated as the main obstacle, as mentioned in the context evaluation. Similarly to our findings, Leigh et al. (2006) also found inadequacy of postgraduate training in the primary care field. Therefore, concise the goals and objectives or increase in the training duration should be considered. It could be accomplished by a 2-year training period. Also, our findings concurrently with Whitcomb (2007) recommendation, family medicine residency programs should provide a more concentrated experience in the ambulatory care.

Furthermore, the participants suggested additional years for training in Family Medicine, for those who wish to continue 4-year residency program (Board degree). Decision makers may consider the integration of the Diploma graduates, as Residency-2 level, in the Board degree in KSA.

Process evaluation. The majority of our study participants were quite satisfied with teaching methods, both clinical and theoretical, as a result of. applying varieties of teaching methods such as the small group techniques, which were proven to enhance the learning achievements as quoted by Crobsy (1997) and Kurth et al. (2007).

The trainees stated that the program has less number of trainers and that they were supportive with a great enthusiasm and provided a friendly learning environment. These qualities encourage participation and improve the learning achievements as indentified by Hutchinson (2003). Therefore, there is certainly a need for increasing the number of trainers for the provision of more supervised practice and teaching sessions.

Product evaluation. Effective consultation, exploring patients perception and providing patient-central approach, is one of the good achievements have made our trainees feel satisfied. This achievement is very important for provision of quality health care, patient satisfaction level, and a better health outcome (Ong et al. 1995; Stewart 1995). Also, our participants reported that they were becoming more competent to practice medicine according to the family medicine concepts and principles. Recognize their roles in treating the common chronic diseases, they have acquired appropriate presentation and communication skills. However, the participants were not very satisfied with the main formative assessment tool (logbook) which needs to be modified and discussed by the trainers. Applying portfolio-based assessment may be more appropriate for documentation and reflection of

day-to-day training and learning needs, as proved by Paulson et al. (1991).

Generally, the trainees appreciated the work environment and expressed a good level of satisfaction which reflects the fact that most of their needs are being met. This was explained by Buciuniene et al. (2005), the main basis of job satisfaction for the PHC physicians is the level of autonomy they get at work, relationship with colleagues, and management quality. In addition, lack of threat to personal integrity and self-esteem is essential for job satisfaction, although challenges can be rewarding and enjoyable (Hutchinson 2003).

Depending on the participants response we can say that, majority of the trainees were satisfied and able successfully achieved most of the training objectives.

Completing the evaluation cycle

The main purpose of evaluation is to inform curriculum development that no curriculum, as cited by Morrison (2003), is perfect in design and delivery. It is not mean that curriculum should be in a constant state of change, but that the results of evaluation should be used to correct the deficiencies in a continuous and updated manner. This has been done by the principal investigator by preparing an evaluation report and communicating it to the concerned authorities.

Research limitations

Allocated time and available resources were major limitations. Thus, other evaluation resources such as the program faculty needs, reports, documents, and other stakeholders were uncovered, hopefully to be included in future ongoing evaluations.

Long-term impact of SDFM program could not be evaluated in this stage, as this is relatively a new program. However, considering our findings can be a useful step for the decision makers for further improvement.

Conclusions and recommendations

The SDFM program, training family physicians to improve the PHC services in KSA, is a genuine effort. Its evaluation is as important for further improvement. The CIPP format utilized to explore the residents' perspective. This evaluation study express to what extent the program objectives are being achieved. It addresses the obstacles to learn, and provides some suggestions for further improvement. Our study findings can be helpful for the policy makers for enhancing the quality of the training and its resources, which is an essential and important part of the Health care system. Further research is recommended to explore if the long term outcomes.

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Competing interests: The author declares that he have no competing interests.

Notes on contributor

ABDULLAH DUKHAIL AL-KHATHAMI, is a consultant family physician and the Director of SDFM training program, Eastern Province, KSA. After graduating, he obtained fellowship in family and community medicine (FFCM) and also passed Arab boards in Family medicine (ABFM). He also earned Masters in medical education from Cardiff University, UK.

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