

A Study of Barriers and Facilitators of Clinical Practice Guidelines Implementation among Physicians

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Alnaim and Almazrou.: Barriers and Facilitators of Clinical Practice Guidelines

There is a gap in understanding the barriers and facilitators related to guideline implementation in Saudi Arabia. A descriptive cross sectional study was conducted to identify the factors that may act as barriers or facilitators of clinical practice guidelines used by physicians working in Riyadh, Saudi Arabia. A survey was distributed to 215 physicians working at universities and government hospitals in Riyadh city. The survey was pilot-tested on a small group of physicians to improve the clarity and limit response bias. A total of 157 physicians completed the questionnaire. About 88.5% of the physicians indicated that they did implement clinical practice guidelines in their practice while 9.6% declared that they did not implement any guidelines. Clinical practice guideline implementation was not affected by the physician role, years of experience or nationality. There were less female physicians that opted for clinical practice guidelines ($P < 0.5$). Eighty four percent of the physicians chose them because they are evidence-based while only 40.1% incorporated them because it was part of their institutions' regulation. There was a weak positive relation between the total scores of barriers and facilitators assessment tool and the nationality of the physician. The reasons for choosing specific guidelines were not determined by the physician role, years of experience, nationality or gender. Most agreed that clinical practice guidelines served as a good foundation for self-study and still provide space for them to come to their own conclusions, but at the same time, they would like to know more about them before they decide to apply it. The implementation of guidelines was obstructed by three barriers, which were lack of support by the leadership, lack of awareness and lack of knowledge. On the other hand, the ease of access and autonomy has driven the implementation of clinical practice guidelines. Nonetheless, the barriers and facilitators experienced by the physicians may differ depending on their ethnicity and gender.

Key words: Clinical practice guidelines, barriers, facilitators, physicians

Clinical practice guidelines (CPGs) are defined by Field and Lohr as “systematically developed statements to assist practitioners and patients in making decisions on an appropriate health care for specific circumstances”^[1]. In 2011, the Institute of Medicine (IOM) defined CPGs as “statements that include recommendations intended to optimize patient care that are informed by a systematic review of evidence and an assessment of the benefits and harms of alternative care options”^[2]. The guidelines are designed to support the decision-making processes in patient care. The movement towards evidence-based healthcare has been gaining ground quickly over the past few years, as it is propelled by clinicians, legislators and organizations who are concerned about quality, consistency and costs. CPGs, based on standardized best practice, have been shown to be capable of driving improvements in quality and consistency in healthcare^[3].

The process of collecting, assembling and transferring research evidence into practice in health care settings is challenging, but it is vital to the provision of effective, safe and equitable health care. Hence, the development of CPGs is an important way to facilitate the use of evidence in clinical practice^[4]. The principles and methods for developing guidelines have progressed since the 1990s, strongly influenced by the advancement in evidence-based medicine (EBM)^[5]. As such, the guidelines are now being developed at international, national and local levels^[6]. The Cochrane Collaboration

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and the National Institute for Health and Care Excellence (NICE) are few examples of organizations that have a long experience in developing guidelines to support decisions regarding safe and effective medical and public health interventions^[7]. There are signs of an increased emphasis on better pace and better quality on the development of guidelines in the past decade, which is exemplified by the emergence of guideline clearing houses and many international programs and societies^[8].

The last few years have seen some significant changes in the methods concerning the development of CPGs where several international initiatives have been put forward in order to develop credible guidelines. These undertakings have addressed various problems such as conflicts of interest, balancing the advantages and disadvantages of having input from experts and assuring that the conflicts of interest do not influence recommendations^[9]. At the same time, methodologists have charged on to develop frameworks and tools, which will help to facilitate the development and dynamic updating of trustworthy guidelines^[10]. The guidelines will be useful in different settings such as to guide the introduction of new procedures or services, improve clinical outcomes, encourage the adoption of cost-effective interventions or to reduce the length of hospitalization^[11].

The literature is growing with studies that explore the barriers to the implementation of CPGs. There are few identified barriers which include, but not limited to, the lack of support by the leadership, lack of financial resources, and behavioral inconsistency. Other barriers might be related to the physician himself such as the lack of agreement and confidence with specific guidelines as well as lack of motivation^[12]. Apart from that, the implementation process could also be hindered by system or process barriers ranging from the lack of familiarity and awareness, volume overload, to the time needed to stay informed. Several less frequently identified barriers are related to the perceived quality of the CPGs and evidence, or patient concerns, while specific guideline-related barriers may include the complexity, compatibility with existing values, need for extra resources or acquisition of new knowledge and skills^[13,14].

In Saudi Arabia, data regarding the barriers and facilitators of the implementation of CPGs is scarce, and those available data mainly focuses on the adaptation of EBM. Al-Almaie *et al.* found that the main barriers

to the practice of EBM by the physicians appeared to be a lack of knowledge, basic skills facilities, and limited time^[15]. In another study, the major perceived barriers in practicing EBM were patient overload and lack of personal time. The respondents thought that the most appropriate way to encourage the EBM was by learning the skills of EBM, followed by using evidence-based guidelines developed by the colleague^[16]. These results, although not directly applicable, pave the way for more detailed studies in all aspects of EBM practice and implementation in the Saudi Arabia.

Wahabi *et al.*^[17] investigated the barriers and facilitators on the implementation of a specific CPG, the Pediatrics Asthma Management Protocol (PAMP). They studied physicians' adherence to the PAMP in an emergency department with the objective of examining the compliance of the healthcare providers. They also reviewed the patients' chart to investigate the compliance of the healthcare providers to eight recommendations of the PAMP whereby in the event of non-compliance, a focus group interview was conducted to determine the reasons that led to the non-compliance. They found that organizational barriers and the lack of an implementation strategy for the protocol, in addition to the attitude and beliefs of the healthcare providers, are the main factors behind the non-compliance to the CPG^[17].

These few studies have not looked at the problem from the perspective of physicians in Saudi Arabia. Findings from studies in western or Asian countries cannot be completely extrapolated to local physicians, as there may be unique difference or unidentified factors. Most studies done in Saudi Arabia focused on single specific guidelines. There exist a gap in the understanding of the barriers and facilitators related to guideline implementation. This understanding is critical for development of effective and targeted guideline implementation strategies. In this investigation, we aimed to identify and explore the factors that may have acted as general barriers or facilitators on the implementation of the CPGs by physicians in Saudi Arabia.

MATERIALS AND METHODS

Setting and participants:

This was a descriptive cross-sectional study conducted in several tertiary hospitals in the Riyadh area. The study survey was distributed to available physicians working in the universities and government hospitals

in the city of Riyadh. As per the latest census, there are 6715 physicians in Riyadh. The survey was carried out on 215 physicians. The proposal was first submitted to the Institutional Review Board (IRB) of each institution for approval and obtained an expedited approval due to the observational nature of the study. After identifying eligible participants, verbal consent was obtained from each participant where the study aims, objectives, and potential values were explained. All participants were treated with respect from the time they were approached, even if they refused enrolment, as well as throughout their participation. The generated data was stored after each participant was coded appropriately to ensure confidentiality. Hence, none of the research output data was traceable to any participant.

The survey was based on the instrument developed by Peters *et al.*^[18]. The survey design consisted of three main sections. The first section covered the physicians' demographics and relevant characteristics including their nationality, place of work, specialty and current position, in addition to their experience with CPGs. The second section was the barriers and facilitator assessment tool which addressed the physicians' views on the different barriers and facilitators presented to them. The questions required the respondents to indicate how much they agreed or disagreed with each statement. Every question had five answers scored on a scale which is as follows: 1-strongly disagree through to 5-strongly agree. The third component consisted of open ended questions regarding the barriers and facilitators. The survey was pilot-tested on a small group of physicians to improve its clarity and limit response bias.

The survey was delivered manually to an appropriate sample of physicians. The survey was delivered through the secretarial services of the respective departments. The surveys were distributed on different working days of the week to the physicians available on those days. If the response rate was low, the next approach was to deliver the survey by hand directly to the physicians and wait for its completion. The recruited physicians were given the option to refer the survey to a colleague if they believed someone else in their department was better able to answer the questions.

Statistical analysis:

The data was analyzed using SPSS (SPSS, version 21). Descriptive statistics (frequencies and percentages) were used to represent the demographic characteristics of participating physicians. A score was calculated

for the barriers and facilitators assessment tool for each participant. The Kruskal-Wallis H test was used to determine the difference in the barriers and facilitators assessment tool score in the different demographics groups. Chi-Square test was used to determine the effect of different demographic variables on the implementation of CPGs in practice. Pearson correlation was used to test the correlation between the barriers and facilitators assessment tool score and the reasons physicians gave to choose particular CPGs. A step-wise multiple linear regression was performed to assess the correlation between demographics and the barriers and facilitators assessment tool score. For all analysis, 2 tailed $P < 0.05$ was considered as statistically significant.

RESULTS AND DISCUSSION

A total of 157 physicians completed the survey. Most of the physicians who responded were residents and registrars at the percentage of 39.4 and 34.8, respectively, which reflected the staffs' demographic. The majority of the respondents were male (63.7%). Only 14.6% of the physicians had over 20 y of medical experience. The majority of the respondents were junior physicians with 0-5 y of experience (38.2%). Saudi nationals comprised 43.3% of the respondents (Table 1).

Regarding the implementation of CPGs, 88.5% of the physicians indicated they did implement CPGs in their practice while 9.6% did not implement any guideline. The implementation of guideline was not affected by the physician's role, years of experience or nationality. It is interesting to note that there was a statistically

TABLE 1: DEMOGRAPHICS OF PARTICIPANTS

Demographic characteristics	Category	Percent
	Consultant	24.5
Role in respective department	Assistant consultant / registrar	34.8
	Resident	39.4
Gender	Male	63.7
	Female	35.0
Years of experience (y)	0-5	38.2
	6-10	16.6
	11-15	14.6
	16-20	14.6
	>20	14.6
Nationality	Saudi	43.3
	Non-Saudi	54.1

The majority of the respondents were junior physicians with 0-5 y of experience (38.2%). Saudi nationals comprised 43.3% of the respondents

TABLE 2: GUIDELINE IMPLEMENTATION AND DEMOGRAPHICS

Variables	Do you implement clinical practice guidelines in your usual daily practice?		*P-value
	Yes	No	
Role in respective department			
Consultant (n=38)	36 (94.7%)	2 (5.3%)	0.137
Assistant consultant/registrar (n=54)	51 (94.4%)	3 (5.6%)	
Resident (n=60)	51 (85.0%)	9 (15.0%)	
Gender			
Male (n=100)	94 (94%)	6 (6.0%)	0.033
Female (n=54)	45 (83.3%)	9 (16.7%)	
Years of experience (y)			
0-5 (n=59)	53 (89.8%)	6 (10.2%)	0.778
6-10 (n=26)	22 (84.6%)	4 (15.4%)	
11-15 (n=23)	22 (95.7%)	1 (4.3%)	
16-20 (n=23)	21 (91.3%)	2 (8.7%)	
>20	21 (91.3%)	2 (8.7%)	
Nationality			
Saudi (n=68)	60 (88.2%)	8 (11.8%)	0.481
Non-Saudi (n=84)	77 (91.7%)	7 (8.3%)	

Statistically significant difference in the implementation between males and females ($P<0.5$) as more females chose not to use guidelines. *Chi-square test

significant difference in the implementation between males and females ($P<0.5$) as more females chose not to use guidelines (Table 2). In terms of reasons for choosing a specific guideline, Table 3 shows that most physicians (84.1%) prefer a particular guideline because it was based on evidence, while only 40.1% implemented a guideline as it was required by their institution. Apart from that, the physician's role, years of experience, nationality or gender did not have any effect on the reasons (Table 4).

Table 5 outlines the physicians' perceptions of the barriers and facilitators which may affect the implementation of CPGs. After performing multiple regression analysis to detect the effects of different demographic characteristics on the total scores of barriers and facilitators assessment tool, we found a weak positive relation between the total scores of barriers and facilitators assessment tool and nationality,

since r is 0.297, P -value is 0.003, where r is Pearson correlation coefficient.

In this investigation, we explored factors that may have acted as general barriers or facilitators of CPGs use by physicians by conducting a survey on 157 physicians. The analysis shows that a high percentage of physicians were using CPGs in their practice. Most participants used CPGs because they are evidence-based, while only 40.1% implemented guidelines as per instructed by the institution. This highlights a structural barrier where there is a lack of support by the leadership, hence the physicians make independent choices in deciding

TABLE 3: REASONS PHYSICIANS GIVE FOR CHOOSING A SPECIFIC GUIDELINE

Reasons for choosing a specific guideline	Percent of physicians who agree	Mean	SD
Evidence based guideline	88.1	4.59	0.635
Have easy layout and are user friendly	66.3	4.02	0.935
Recommended by a colleague	50.3	3.6	1.097
Address most clinical scenarios seen in my daily practice	77.8	4.32	0.729
Obligated by institution/department head	40.1	3.2	1.268

Most physicians prefer a particular guideline because it was based on evidence, while only 40.1% implemented a guideline as it was required by their institution

TABLE 4: REASONS PHYSICIANS GIVE FOR CHOOSING A SPECIFIC GUIDELINE IN RELATION TO DEMOGRAPHICS

	N	Mean	SD	P-value
Role in respective department				
Consultant	36	19.1	3.9	0.571*
Assistant consultant/registrar	51	19.3	4.5	
Resident	53	19.2	2.9	
Gender				
Male	94	19.5	3.8	0.596**
Female	47	18.5	4.8	
Years of experience in area (y)				
0-5	53	19.5	2.6	0.830*
6-10	23	18.9	3.9	
11-15	21	18.9	4.1	
16-20	22	18.1	6.5	
>20	22	20.2	2.4	
Nationality				
Saudi	94	19.5	3.4	0.596**
Non-Saudi	47	18.5	4.8	

*By Kruskal-Wallis Test, **by Mann-Whitney Test

TABLE 5: BARRIERS AND FACILITATOR ASSESSMENT TOOL

SD	Mean	Statements
0.94	3.6	Clinical practice guidelines leaves enough room for me to make my own conclusion
1.02	3.3	Clinical practice guidelines leaves enough room to weigh the wishes of the patient
0.82	4	Clinical practice guidelines are a good starting point for my self-study
1.02	2.3	I did not thoroughly read nor remember the clinical practice guidelines
1.02	3.9	I wish to know more about the clinical practice guidelines before I decide to apply it
1.03	2.2	I have problems changing my old routines
0.9	2.4	I think parts of the clinical practice guidelines are incorrect
0.99	2.1	I have a general resistance to working according to protocols
0.98	2.9	Other doctors or assistants do not cooperate in applying clinical practice guidelines
1.03	2.5	Managers/directors do not cooperate in applying clinical practice guidelines
1.02	2.6	Patients do not cooperate in applying clinical practice guidelines
0.96	2.3	Applying the clinical practice guidelines is too time consuming
0.86	2	Clinical practice guidelines does not fit into my ways of working at my practice
1.09	2.9	Working according to clinical practice guidelines requires financial compensation
0.9	3.6	The lay-out of clinical practice guidelines makes it handy for use

on whether or not to implement guidelines. This barrier has been pointed out in several studies carried out in various settings^[9-22]. Moreover, Chapman *et al.* has observed that if a team practice is tailored according to the team head, the choice of which CPG to adopt might change if a new team head is appointed^[19].

Based on the results obtained, most physicians believed the CPG is a good starting point for their self-study and would like to know more about it before they decide to implement it. This indicates that the physicians would like to participate in the process of choosing which CPG to implement in their practice which is a theme that has been identified in other studies^[17]. A lack of participation of the target group of users in the development of the protocol and original guidelines was a significant barrier in the implementation of the pediatric asthma guidelines in the emergency department in Saudi Arabia. It can be argued that the physicians in this study perceived their lack of awareness of the guideline and a lack of knowledge as a barrier to implementation. This has been one of the most reported barriers across studies in this topic^[20-22,24]. This lack of knowledge could be divided into two types; first, the lack of knowledge about the guideline itself which has been labeled as awareness in some studies^[23,25], and second, lack of knowledge in the usage or application of the guidelines, which has been labeled as skills in other studies^[22,24].

An awareness of a CPG is an essential step to implement it; however, physicians can be aware of the CPG but choose not to implement it. This phenomenon speaks of acceptability, at least from a clinician's perspective, and suggests that the implementation would be greatly aided by efforts to disseminate information about the

program more widely. Basic knowledge is essential, but not sufficient, and other modalities of dissemination have to be employed.

There is an evidence of physicians who firmly believed that CPGs are not limiting and leave enough room for their autonomy and the incorporation of patient's wishes. This apparent autonomy seems to be a unique finding in this study. McGuire *et al.* described an autonomy-supporting leadership where most staffs viewed their leadership as being "supportive", but also emphasized that their leadership delegated decisions and execution to the program-level leaders^[26] With regards to the patients' preferences, Lugtenberg *et al.* found that it was one of the most perceived barriers to adherence, which is contrary to the case in this study^[27].

In addition, most respondents perceived that CPGs are handy to use even when they reported difficulties in changing routines and habits to follow guidelines^[27,28]. The majority of participants agreed that most of the barriers presented to them were not apparent in their practice except two barriers which were a lack of cooperation from other colleagues in implementing the CPGs in addition to those who assumed that the implementation of guideline would require financial compensation. Le *et al.* saw that in some practices, the practitioners prioritized time and resources on collective implementation activities and organized their everyday practice to support these activities. In another setting, a group of practitioners would discuss the guidelines collectively but the final decision on the implementation will be decided individually^[29]. As such, an active implementation support is an important facilitator for the adoption of the guideline^[19,20,26].

In our study, Regression analysis exhibited that the implementation of guideline was not affected by the physician's role, years of experience or nationality. However, there was a statistically significant difference between the male and female practitioners ($P < 0.5$). This phenomenon has been scarcely studied and relatively overlooked. Feldman *et al.* found that female family physicians are most likely to have positive attitudes toward guidelines^[30]. A review by Berger in 2008 reported that the physicians' gender influenced their clinical practice and physicians' practice patterns are influenced by their own demographic characteristics^[31]. A previous work has found a more positive attitude towards the implementation of guidelines by younger physicians^[32]. In the Tunis study of internal medicine physicians, more recent graduates from the medical school were reported to have more positive attitudes toward guidelines^[33]. In this study, the analysis also showed that the physician's ethnicity affected the application of CPGs, albeit weakly. Although this issue was not explored extensively in the literature, a study by Koo *et al.* found considerable differences in the practitioners' colorectal cancer screening practices in different ethnicities^[34-36].

There are some limitations in the study that are worth mentioning. Although our response rate was around 62%, it may nevertheless limit the ability to generalize our findings, as those with a positive attitude toward guidelines may be overrepresented in our sample as well as male physicians. Apart from that, the investigated barriers were not based on a specific guideline, as the study of specific guidelines could have potentially yielded different patterns of barriers. Nonetheless, the general nature of the survey was expected to identify barriers that were representative across all guidelines in practice. Furthermore, any adherence was based on self-report and may represent an overestimate as a result of social desirability bias. However, all participants were assured anonymity and no identifying information was collected which should give the participant the freedom to complete the survey without any external pressure.

Most physicians in Saudi Arabia were receptive of the CPGs and will apply them in their practices if there are more leadership and structural support for the implementations. A lack of cooperation between colleagues is an important issue which needs to be addressed in order to find practical solutions. Moreover, by engaging physicians in the choice of CPGs and providing limited flexibility to accommodate their

input and patients' wishes will be a good motivator for them to implement CPGs. To make a CPG more accessible for practitioners, it should be rewrite and summarize in simpler terms. Each team needs to study their own specific barriers and facilitators in order to be able to address the problems specific to their setting and staffs.

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Conflicts of interest:

There are no conflicts of interest.

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