ORIGINAL ARTICLE

PERCEPTIONS AND IMPLEMENTATION OF ORTHODONTIC CLINICAL PRACTICE GUIDELINES (CPG) BY DENTAL OFFICERS AND ORTHODONTISTS IN MALAYSIA

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ABSTRACT

This survey elucidated the perceptions and implementation of orthodontic Clinical Practice Guidelines (CPGs) by all orthodontists and dental officers in the Ministry of Health Malaysia (MOH). Two different sets of self-administered questionnaires were targeted at first-year dental officers (FYDO), dental officers (DO) and administrative Senior Dental Officers (SDO) in one group and orthodontists in another group. Only 30% responded from a total of 1,327 MOH dental officers, with no participation from three states. Majority (89%) of officers have heard of CPGs although some were unsure of their purpose and usage. About 69% have read orthodontic CPGs of whom 87% have read other MOH dental CPGs. About 78.6% found CPGs 'good to excellent' but 16.0% did not answer this question. Some comments received included: language was confusing, inadequate details and pictures, need improvement, irrelevant, need CPGs for other orthodontic problems, need more knowledge first and requests for more copies. Only 27.7% used them often, 53% occasionally and 15% hardly follow CPGs. About 82% felt that they were encouraged to use CPGs in their workplace and the majority (86%) knew where they were kept especially SDOs and DOs. About 90% in the orthodontist group have received hard copies of orthodontic CPGs but the majority (76%) has not seen them on the website. Although all felt that CPGs were useful to officers and encouraged their use, only 62.5% have introduced CPGs to their officers. There was generally more awareness and usage of CPGs among SDOs compared with DOs and FYDOs. The dissemination and availability of orthodontic CPGs is reasonably good. However, the implementation by orthodontists and administrative officers can be improved for better awareness, understanding and usage by dental officers, especially FYDOs.

Key words: *clinical practice guidelines, orthodontics, perception*

INTRODUCTION

Clinical Practice Guidelines (CPG) are systematically developed statements, based on best evidence, intended to assist practitioners and patients in making decisions about appropriate management of specific clinical conditions[1]. CPG is one of the activities based on 'best practice' which is a collective approach in the management of information to aid the clinician in decision-making[2]. Pragmatic use of CPG can improve clinical effectiveness and improve the quality of care for our patients since a leading cause of inadequate standard of care is the significant variations in medical practice which is not attributable to patient differences or diseases[3]. Quality improvement tools such as CPG have been shown to reduce practice variability, thereby improving the process and outcomes of care[3].

One of the quality initiatives introduced as a national policy by the Ministry of Health Malaysia (MOH) was the formulation of clinical practice guidelines intended for dental practitioners and patients. The orthodontic CPGs published were in simple text and pictures meant for early diagnosis and management of common orthodontic problems seen in young children and were within the scope of management by dental officers. These CPGs are also useful as a guide in recognizing certain developing orthodontic problems which may be intercepted early without complex fixed appliance treatment.

The MOH published the first dental CPG in 2002 and at the time of this survey there were nine dental CPGs of which two were orthodontic. The two orthodontic CPGs published were **"Management of anterior crossbite in the mixed dentition (July 2003)" and "Management of the palatally ectopic canine (September 2004)"**. *The other dental CPGs were "Management of avulsed anterior teeth in children (December 2002)", "Antibiotic prophylaxis against wound infection for oral surgical procedures (January 2003)", "Management of periodontal abscess (April 2004)", "Management of chronic periodontitis (December 2005)", "Management of unilateral condylar fracture of the mandible (December 2005)", "Management of unerupted and impacted third molar teeth (December 2005)" and "Management of severe early childhood caries (December 2005)"* . These are available in hard copies in all main dental clinics and accessible on the MOH website.

Although our policy makers have taken care to produce the best quality guidelines, efforts are necessary for an effective implementation into daily practice[4]. In a recent

(2006) systematic review of health professionals' perception on CPGs; majority of whom were physicians, the three most common reported barriers to implementation were time constraints, lack of applicability due to patient characteristics and lack of applicability due to the clinical situation[5]. On this subject, there appeared to be very little known about health professionals other than physicians[5].

As clinical guidelines proliferate, their impact on public policy issues and medico-legal significance has been challenged by the law. Adherence to guidelines is not automatically equated with reasonable practice if a physician's conduct is held to have been negligent or if the clinical guidelines are found to be contributory to patient harm[6,7]. Conversely, guidelines should not be used as the sole determinant of the standard of care to determine the outcome of medical liability litigation and coverage claims8. The applicability and legal status of a guideline depends on the forming authority, quality, flexibility and scope of application[9].

There has been no study carried out on the usage or perceptions of MOH dental personnel on MOH dental CPGs since they were published. In early 2006 the MOH orthodontic specialist group was requested by the Ministry to carry out a simple survey to obtain feedback from the 'implementers' and all 'end-users' on dental CPGs, in particular to orthodontic CPGs. Thus, the main objectives of this study were to assess the implementation of orthodontic CPGs and to assess the perception of all orthodontists and dental officers on orthodontic CPGs.

METHODOLOGY

Sample (Population)

All orthodontists and dental officers currently working in government dental clinics in the country in April 2006 were included. There were 1327 dental officers and 26 orthodontists in MOH at the time of the survey. This figure was obtained from the MOH headquarters. The questionnaires were vetted by the Head of Orthodontists in MOH and passed through proper channels to the Director of Dental Services in Malaysia. The contents of the questionnaire were deemed unnecessary for ethical approval. Dental officers were categorized into three groups according to their posts: FYDO (first-year dental officers), DO (Dental officers more than 1 year in service) and SDO (administrative senior dental officers).

Research tool

Two different sets of self-administered questionnaires in the Bahasa Malaysia language were formulated for the two target groups (orthodontists and dental officers) respectively. Questionnaire A was targeted at orthodontists to assess their perception of CPGs and Questionnaire B was to assess usage and perception of CPGs by all dental officers (Appendix 1 & 2).

Protocol

The sample questionnaires A and B were sent out to all State Deputy Director of Oral Health Services in the country through the Kedah State Deputy Director of Oral Health Services through proper channels since the author was from Kedah. Explanations and instructions were clearly stated in the official letters. Each state was responsible for sending the respective questionnaires to their orthodontists and dental officers. Completed questionnaires were to be collected by the respective states and returned to the author through their individual State Deputy Director of Oral Health Services. They were initially requested to return the forms by end of June 2006. This seemingly lengthy time was to cater for administrative 'red-tape' and bureaucracy in dissemination of the forms through the proper channels. A reminder letter was sent out to the respective states by end of June when there was no response from the state.

Unfortunately due to an oversight by the administration in one state, no questionnaires were sent out by end of June. When the mistake was discovered, the author allowed the particular state to carry out the survey and thus the time taken to receive and compile all the returned questionnaires was extended to 4-6 months. Two other states did not respond at all and one state did not want to carry out the survey ,although the author requested, the reason being they did not have an orthodontist permanently placed in the state at that time. Orthodontic services in this particular state were covered by visiting orthodontists from neighboring states.

Analysis

All completed questionnaires were analyzed using the SPSS version 11.0 program. Results of descriptive statistical analyses are displayed in tables.

RESULTS

A total of 394 (29.7%) questionnaire B were returned out of a total of 1327 dental officers in the MOH. Of the respondents, there were 278 DOs, 53 SDOs and 63 FYDOs. There were 32 returned questionnaire A although the number of orthodontists were 26 in April 2006. It appears that a few of form A may have been mistakenly distributed to other dental specialists in main clinics besides orthodontists in some states. Although the returned questionnaires by other dental specialists should have been excluded in the analysis, it was not possible to do so as there was no way to identify the respondents. Since dental specialists in MOH are provided with hard copies of all current dental CPGs which are also accessible on the MOH website, they are also privy to the dissemination and usage of the orthodontic CPGs as they see fit. Thus, all 32 respondents were included as the 'Orthodontic' group in the analyses.

Findings from Questionnaire A (Orthodontic group)

About 59.4% (19) has received 2 orthodontic CPG booklets, 31.3% (10) received 1 booklet and 9.4% (3) did not receive

Table 1. Question on whether Officers have heard of CPGs

Officers	Response		N
	Yes	No	
DO	248 (89.2%)	30 (18.8%)	278
SDO	52 (98.1%)	1 (0.9%)	53
FYDO	50 (79.4%)	13 (20.6%)	63
Total	350 (88.8%)	44 (11.2%)	394

Note: Respondents who answered NO in question 1 stopped answering further questions. This group was excluded in the total N in subsequent analyses

Table 2. Question on whether officers have read orthodontic CPGs

Officers	Response			
	Yes	No	*missing	N
DO	172 (69.4%)	74 (29.8%)	2 (0.8%)	248
SDO	39 (75.0%)	11 (21.2%)	2 (3.8%)	52
FYDO	30 (60.0%)	20 (40.0%)	0	50
Total	241 (68.9%)	105 (30.0%)	4 (1.1%)	350

**missing - question not answered*

Table 3. Question on whether Officers have read other CPGs from MOH

Officers	Response			
	Yes	No	*missing	N
DO	217 (87.5%)	30 (12.1%)	1 (0.4%)	248
SDO	49 (94.0%)	2 (3.8%)	1 (1.9%)	52
FYDO	40 (80.0%)	9 (18.0%)	1 (2.0%)	50
Total	306 (87.4%)	41 (11.7%)	3 (0.9%)	350

**missing - question not answered*

any. Only 9.4% have seen the CPGs in the internet. Half of the respondents did not answer this question.

About 62.5% (20) have introduced or shown orthodontic CPG booklets to their attachment dental officers. The rest of the respondents (34.4%) have not shown to their officers including one respondent who explained that he/she did not have attachment officers in the clinic and one did not answer the question.

All except one respondent felt that the orthodontic CPGs were useful and encouraged their use. One respondent felt that officers should be tested first to see if they understood the CPGs and should be used in appropriate cases. Another respondent commented that the topics in the CPGs have been covered in routine lectures to dental officers, thus they should be able to understand and use them. A third respondent commented that it was the individual responsibility of specialists and officers to use these CPGs in their routine. He/she expressed that officers were not referring to CPGs for management and were too quick to refer even simple orthodontic cases to the orthodontists. Another comment was the CPGs were not filed properly in the SDO's office.

Findings from Questionnaire B (SDO, DO, FYDO)

Heard of CPGs / read orthodontic CPGs (Table 1, 2):
About 88.8% (350) of all dental officers have heard of CPGs and 11.2% (44) have not. Those who have not heard of CPGs were asked to stop at question 2. Of those who have heard of CPGs, only 68.9% (241) have read orthodontic CPGs and 30% (105) have not read any orthodontic CPGs. About 1.1% (4) did not answer this question. Table 1 shows that more SDO have heard of CPGs compared with DO and FYDO. Of the 350 respondents who have heard of CPGs, 75% of SDO, 69.4% of DO and 60% of FYDO have read orthodontic CPGs (Table 2).

Table 4. Question on other CPGs read by Officers

Officers	CPGs							N
	General dentistry only	Paediatric dentistry only	Periodontal only	Oral surgery only	Others only	More than 1 discipline	*Missing	
DO	19 (8.8%)	12 (5.5%)	11 (5.1%)	13 (6.0%)	4 (1.8%)	145 (66.8%)	13 (6.0%)	217
SDO	2 (4.1%)	6 (12.2%)	0	4 (8.2%)	2 (4.1%)	33 (67.3%)	2 (4.1%)	49
FYDO	10 (25.0%)	4 (10.0%)	1 (2.5%)	0	4 (10.0%)	16 (40.0%)	5 (12.5%)	40
Total	31 (10.1%)	22 (7.2%)	12 (3.9%)	17 (5.6%)	10 (3.3%)	198 (64.7%)	20 (6.5%)	306

**missing- question not answered*

Table 5. Question on whether information in the orthodontic CPGs were adequate and useful

Officers	Response					N
	Excellent	Good	Satisfactory	Not good	*missing	
DO	36 (14.5%)	158 (63.7%)	8 (3.2%)	0	46 (18.5%)	248
SDO	12 (23.1%)	33 (63.5%)	1 (1.9%)	0	6 (11.5%)	52
FYDO	2 (4.0%)	34 (68.0%)	3 (6.0%)	0	11 (22.0%)	50
Total	50 (14.3%)	225 (64.3%)	12 (3.4%)	0	63 (18.0%)	350

**missing - question not answered*

Have Read other MOH CPGs (Table 3, 4)
About 87.4% (306) have read other published CPGs from MOH and 0.9% (3) did not answer. Of those who have read other CPGs, 198 (64.7%) have read more than one discipline of dental CPGs. About 6.5% (20) respondents did not answer this question. About 94% of SDO have read other MOH CPGs compared with 87.5% of DO and 80% of FYDO (Table 3). Less FYDO (40%) have read more than one discipline of dental CPGs compared with SDO and DO (Table 4). More DO and FYDO have read CPGs in General dentistry compared to other specialist topics.

Information in orthodontic CPGs (Table 5) :
Question 6 asked on whether the information in the orthodontic CPGs were adequate and useful from the aspect of knowledge and as a guideline; about 14.3% (50) answered CPGs were excellent, 64.3% (225) said they were good and 3.4% (12) said they were satisfactory. About 18.0% (63) did not answer this question. The majority of SDO, DO and FYDO felt that the information was good (Table 5). More SDO (23.1%) felt the information was excellent compared with DO (14.5%) and FYDO (4%).

Five respondents' comments on the contents of the CPGs included 'language was confusing, inadequate details and pictures'. One felt that the orthodontic CPG was not relevant in his/her routine work, two respondents felt they needed improvement and three respondents commented that more CPGs for other orthodontic problems should be available. Four respondents commented that they need to have more knowledge and lectures before they could follow the CPGs. And three respondents confused CPGs with the Index of Orthodontic treatment need, referral guidelines and purpose of CPGs.

Routinely use/follow CPGs (Table 6):
Only 27.7% (97) of respondents claim that they often use or follow CPGs whilst 53.1% (186) have used them occasionally. About 14.9% (52) seldom follow CPGs whilst 2.0% (7) admitted they have never used them. There were 2.3% (8) respondents who did not answer this question. Table 6 shows that the majority of SDO (51.9%), DO (51.6%) and FYDO (62%) have used the CPGs occasionally. Twice as many DO have followed CPGs more often compared with FYDO.

Six respondents commented that it is not relevant to officers as they do not do orthodontic treatment in their clinic and they hardly see orthodontic cases. Four respondents said they would refer patients who needed orthodontic treatment to the orthodontists. Three said they did not have opportunities to carry out orthodontic treatment as the treatment was done or decided by the orthodontists. One respondent used the CPG to counsel patients.

Table 6. Question on whether Officers use/ follow CPGs in their daily practice

Officers	Response					N
	Often	Occasional	Seldom	Never	*missing	
DO	72 (29.0%)	128 (51.6%)	38 (15.3%)	4 (1.6%)	6 (2.4%)	248
SDO	19 (36.5%)	27 (51.9%)	6 (11.5%)	0	0	52
FYDO	6 (12.0%)	31 (62.0%)	8 (16.0%)	3 (6.0%)	2 (4.0%)	50
Total	97 (27.7%)	186 (53.1%)	52 (14.9%)	7 (2.0%)	8 (2.3%)	350

**missing- question not answered*

Encouragement to use CPGs/know where CPGs kept About 82.2% (287) of respondents said they were encouraged to use CPGs in their workplace whilst 15.7% (55) said they were not. About 2.3% (8) did not answer this question. Most SDO (86.5%) and DO (83.1%) felt they were encouraged to use CPGs compared with only 72% in FYDO (Table 7). About 2.3% (8) did not answer this question.

Table 7. Question on whether Officers were encouraged to use CPGs in their workplace

Officers	Response			
	Yes	No	*missing	N
DO	206 (83.1%)	38 (15.3%)	4 (1.6%)	248
SDO	45 (86.5%)	5 (9.6%)	2 (3.8%)	52
FYDO	36 (72.0%)	12 (24.0%)	2 (4.0%)	50
Total	287 (82.0%)	55 (15.7%)	8 (2.3%)	350

**missing - question not answered*

About 86% (301) of respondents knew where the CPGs were kept in their workplace, 6.3% (22) were unsure and 6.3% (22) did not know. About 1.1% (5) did not answer this question. Most SDO (94.2%) and DO (89.9%) knew where the CPGs were kept whilst only 58% of FYDO knew. About 22% of FYDO were unsure of where they were kept compared to 4% in DO (Table 8).

Availability and accessibility of CPG in the workplaces Of those respondents who knew/ not sure of where the CPGs were kept, 93.8% (303) said they were easily available or accessible for use in the workplace. Only about 3.4% (11) said it was difficult to access, one respondent said the CPGs were locked and four (1.2%) said they were not available at their workplace. About 94.8% (221) of DO who knew where the CPGs were kept found that they were easily accessible compared with 80% (32) of FYDO. However,two SDO reported that CPGs were not available in their workplace.

Five respondents requested for personal copies and nine commented that there were limited copies to borrow from the office. One respondent commented that the CPGs were kept by the Officer-in-charge and not easily accessible.

DISCUSSION

The overall response rate was only about 30% which was lower than expected. Although self-administered questionnaires which is dependent on the initiative and onus of the subject to answer and send back to the researcher/office, the author expected a higher response rate of more than 50% since the survey was carried out on behalf of the Ministry of Health Malaysia. There was no response and no reason given by the two states for non-participation despite the reminder letters. One can only speculate on the attitude and apathy of the administrative offices and officers. Admittedly, the current study has weaknesses arising from inadequate control by the author as it was carried out through bureaucratic channels. Perhaps a more effective method of getting better response rate from posted self-administered questionnaires would be to avoid bureaucracy if possible, send the questionnaires directly to each officer in the sample selected and ensure their return with postage-paid envelopes. This would require

Table 8. Question on whether Officers know where the CPGs are kept in their workplace

Officers	Response				N
	Yes	No	Not sure	*missing	
DO	223 (89.9%)	12 (4.8%)	10 (4.0%)	3 (1.2%)	248
SDO	49 (94.2%)	1 (1.9%)	1 (1.9%)	1 (1.9%)	52
FYDO	29 (58.0%)	9 (18.0%)	11 (22.0%)	1 (2.0%)	50
Total	301 (86.0%)	22 (6.3%)	22 (6.3%)	5 (1.4%)	350

**missing - question not answered*

Table 9. Question on whether the CPG booklets were available / accessible in the workplace

Officers	Response					N
	Easy	Difficult	Locked	Not available	*Missing/not relevant	
DO	221 (94.8%)	6 (2.5%)	1 (0.4%)	2 (0.8%)	15	233
SDO	50 (100%)	0	0	0	2	50
FYDO	32 (80.0%)	5 (12.5%)	0	0	13	40
Total	303 (93.8%)	11 (3.4%)	1 (0.3%)	4 (1.2%)	30	323

Note: The 'missing/not relevant' column refers to all those respondents who answered NO and some who answered 'not sure' in the question in Table 8. However, some 'not sure' respondents did answer this question in Table 9, therefore the denominator here (N) are the total number who answered 'know' or 'not sure' in the respective groups in the question in Table 8.

approval from higher authorities and of course incur more expenses.

All FYDOs for the past few years are required by MOH to have a short period of attachment with orthodontists, so they should have been exposed to orthodontic CPGs or at least cases which require simple orthodontic management such as in the CPG "Management of anterior crossbite in the mixed dentition'. Even if the FYDO missed the opportunity to be attached to the orthodontist in the state, all dental undergraduates have exposure to management of patients requiring removable orthodontic appliances as part of their curriculum in the university and were expected to understand the concept and usage of guidelines. This particular CPG on anterior crossbite was meant for dental officers and general practitioners and is within their scope of understanding and implementation. In fact, more senior DOs and SDOs did not have the opportunity to be attached with orthodontists as the FYDO program was not implemented then, and MOH CPGs were not available.

It was encouraging that about 90% of officers have heard of CPGs although some have misconceptions about their purpose and usage. As seen in the respondents' comments, some of them confused CPG with other guidelines and indices and a few thought that it was only used if they were to treat orthodontic cases. All patients seen by orthodontists in MOH are referred by dental officers, so it is very appropriate and relevant for officers to follow the guidelines. About 87% of them claimed they have read other MOH dental CPGs although only about 69% have actually read orthodontic CPGs. There was a higher percentage of SDOs who have read CPGs compared with DOs and FYDOs probably due to the accessibility in their office.

More SDOs (87%) than FYDOs (72%) found the CPGs adequate and useful (Table 2-5). A large number (18.0%) did not answer whether they felt that the information in the orthodontic CPGs were adequate and useful. This was more apparent in FYDOs and DOs probably because they lack understanding in clinical application and working experience. Admittedly officers who are working in the main dental clinics may have better access and a better understanding of orthodontic management as all orthodontists are posted in main clinics. A study on CPG usage among primary healthcare professionals in UK by Hutchinson *et al.* revealed lack of monitoring in many practices[10]. The researchers observed that the subjects needed better understanding and training in these skills before guideline use could be a practical reality. Secondly, they perceived that there was a general lack of interest or awareness in the subjects and the feeling of being overloaded with new initiatives that posed a barrier to usage and implementation[10]. Gravel *et al.* (2006)[9] similarly, reported that the three most common barriers to implementation were time constraints, lack of applicability due to patient characteristics and clinical situation[9].

About fifteen respondents commented on the limited copies of CPGs for reference since only a copy of each CPG is probably available in each respective District dental office, main dental clinic or orthodontist. Furthermore, the CPGs may not be available for reference when needed by the officers if the SDO or person-in-charge is not in the office. Not surprisingly then it is the SDOs (36.5%) who have used the CPGs more often compared with DOs (29%) and FYDOs (12%). But even among SDOs, who are obviously in charge of CPGs and other forms of literature/ documents, there were five who felt that they were not encouraged to use CPGs and two did not know/ not sure where the CPGs were kept (Table 7, 8).

All but one (unanswered question) in the 'orthodontic group' felt that orthodontic CPGs were useful to dental officers and encouraged their routine use. The lower than expected percentage (62.5%) who have introduced/ shown the orthodontic CPGs to their 'attachment' officers may be due to the unavoidable erroneous inclusion of non-orthodontic specialists in this study. From the comments by the specialist group, it appears that removal of barriers to implementation is an essential part of any strategy to improve usage by officers[1,3]. The systematic review by Gravel *et al.*[9] concluded that three of the most often reported facilitators to implementation were; provider motivation, positive impact on the clinical process and positive impact on patient outcomes. There were inadequate questions for the 'implementers' in the current study for an in-depth assessment of their perception and concerns. Since the purpose of this pilot survey was to obtain very basic feedback on CPGs, the findings will help facilitate more in-depth assessment in specific areas of concern on CPGs in future studies.

CONCLUSION

From the limitations of this study, it can be concluded that dissemination and availability of orthodontic CPGs is reasonably good. However, the implementation by orthodontists and administrative officers can be improved for better awareness, understanding and usage by dental officers and especially first-year dental officers.

RECOMMENDATIONS

This study gave some insight into the problem areas of dissemination and implementation of CPGs by orthodontists and administrative senior dental officers. Firstly, it is recommended that all dental officers, especially first-year dental officers, be introduced to the existence, purpose and accessibility of MOH CPGs, in particular to dental CPGs by Senior Dental Officers and specialists. In-house continuing education and motivation in the form of lectures and training in the specific CPGs should be the responsibility of the relevant specialists for better understanding and judicious application in clinical situations by dental officers. Although CPGs are

accessible on the MOH website, the availability of hard copies probably will be more encouraging for novices as it takes initiative and self-motivation to seek answers and information. FYDOs or DOs who have a period of attachment to specialists can make their own photocopies of the relevant CPGs if they wish to have hard copies. This will cut down on costs borne by the administration.

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