Digital Education for Clinical Practice Guidelines: Views of Healthcare Professionals

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ABSTRACT

Clinical practice guidelines (CPGs) are considered among the major tools for improving the quality of healthcare. Compliance with CPGs is still low among healthcare professionals (HCPs) due to a lack of knowledge and skills about CPGs. Digital education is increasingly used in educating and improving HCPs competencies in different areas especially if it is designed according to their views. The current study aimed to explore the views of HCPs regarding digital education for CPGs. **Method:** Qualitative phenomenological study design was used to accomplish this study. Purposive sampling technique of 30 HCPs who have a bachelor's degree or higher. Focus group discussion (FGD) was used to collect data using open-ended questions. **Results**: The study revealed that most HCPs need to know about CPGs through digital education by presenting simple and relevant content using interactive educational strategies. **Conclusion:** Most of the HCPs prefer digital education for CPGs with adherence to the principles of designing and implementing effective interactive digital educational strategy. It is recommended to build the capacity of HCPs regarding CPGs through digital education based on their views.

Keywords: Clinical practice guidelines, Digital education, Healthcare professionals

Introduction:

Clinical Practice guidelines are defined by the Institute of Medicine 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." **(Institute of Medicine [IOM], 2011).** CPGs provide HCPs with recommendations for providing patient care, use as an educational tool, and provide standards for the assessment of their performance **(Panteli et al., 2019).** Moreover, they are used to bridge the gap between practice and knowledge and overcome professional barriers such as lack of time to find and evaluate the evidence **(Amer et al., 2019).** CPGs help HCPs to reduce variations in clinical practice and healthcare costs **(Akindele, Rabiu & Useh, 2020).**

Adherence with CPGs is still reported to be low around the world, despite the presence of implementation and dissemination strategies of CPGs **(Sasaki et al., 2020).** Noncompliance with CPGs is as high as 70% in healthcare and occurs across most disciplines and adherence to CPGs is still low among HCPs **(Liu et al., 2022; Radwan et al., 2017).** HCPs do not have the knowledge or skills to find, evaluate, and integrate evidence recommendations into clinical practice **(Stander, Grimmer & Brink, 2020).** There is a need for

building the capacity of HCPs regarding CPGs **(Young et al., 2020).** Education of HCPs is an essential strategy for integrating and disseminating CPGs in clinical practice **(Tudor Car et al., 2019).** There is a significant shift toward the use of digital education rather than the traditional approach to educating HCPs **(Verville et al., 2021).**

Digital education provides the chance for active participation, learning, and collaboration without any restriction of time or place **(Männistö et al., 2020).** It is considered a low-cost and accessible strategy that is easy to implement and stored for later use by HCPs **(Krnic Martinic et al., 2022).** In addition, digital education has the potential to improve the satisfaction and competencies of HCPs. However, the effectiveness of digital methods depends upon the principles used and the method of implementation as learning objectives, content, and educational strategies **(World Health Organization, 2020).** Digital education should be planned and implemented carefully based on the participants' views to improve their competencies and achieve the desired effects **(Pramila-Savukoski et al., 2023).** Therefore, the educational strategy for educating HCPs regarding CPGs should be developed based on their views.

Aim of the study:

To explore the views of healthcare professionals regarding digital education for clinical practice guidelines.

Method:

Design:

Qualitative phenomenological study design was used to explore in-depth healthcare professionals' views toward digital education for CPGs.

Setting:

The study was carried out at various healthcare organizations (HCOs), Mansoura University Hospitals.

Participants and sampling:

Purposive sampling technique was used in this study to recruit HCPs. The study included 30 HCPs (head nurses, physicians, and pharmacists) who have a bachelor's degree or higher.

Procedure:

Administrative procedure:

Ethical approval was obtained from the Research Ethics Committee of the Faculty of Nursing, Mansoura University for conducting the study. Formal consent was obtained from HCPs after clarifying the aim of the study and ensuring the confidentiality of data. HCPs were informed that they had the right to withdraw at any time from the study without giving any reason.

Literature review:

The researchers reviewed the past, recent, national, and international literature regarding principles of digital education and CPGs using scientific published articles, internet searches, and textbooks. The search was limited to the period from 2011 up to 2023. This review was a guide for developing the study tool.

Data Collection:

The researchers initiated focus group discussions (FGDs) during the period from January 2022 to the end of February 2022. They sent an invitation to HCPs through email and social media **(WhatsApp messages)** after introducing themselves and giving a brief explanation about the objectives of the study.

Online FGDs were conducted according to HCPs' schedules. Each focus group consumed 20-30 minutes through ZOOM meetings. The researchers conducted five online FGDs (as each FGD included 5-6 HCPs) due to their work nature **(Stalmeijer, McNaughton & van Mook, 2014)**. Each FGD was conducted by using a guide that included questions about demographic and occupational characteristics of HCPs such as age, years of experience, occupation, and previous attendance training programs regarding CPGs.

Also, the guide included a semi-structured interview that consisted of 3 open-ended questions to explore HCPs' views regarding suggestions for improving the competencies regarding CPGs, components, and principles of digital education.

A jury committee of five experts in the field of education, evidence-based practice, and CPG development evaluated the content validity of the developed FGD guide. Face validity of the data collection guide was tested by conducting a pilot study on one FGD that included 3 HCPs (10%) of the study sample that were excluded from the study sample.

Data analysis:

Descriptive statistical analysis was used for the demographic and occupational data by using Stand for Statistical Product and Service Solutions (SPSS) program version 23.

Qualitative data was analyzed by thematic analysis to illustrate the collected data. The FGD transcripts were analyzed to conclude the common themes, similarities, and/or variations among HCPS' views. Data were coded, identified under categories and subcategories, and organized together under common themes. To ensure the validity of the thematic analysis, the researchers met three times to review the findings to clarify the analysis of the emerging categories and themes **(Ibrahim 2012).**

Results:

Table (1) shows that 63.3% of HCPs aged from 20 to less than 35 years with a mean of 33.80 (4.56) and 86.7% of them had experience from one year to less than 15 years with a mean of 11.76 (4.56). Moreover, 56.7% of HCPs were head nurses and 86.7% of them did not attend any training program regarding CPGs.

The views of HCPs related to digital education are illustrated in three main themes:**(Diagram 1)**

First theme: *Suggestions for improving HCPs competencies regarding CPGs:*

All HCPs illustrated that improving the competencies required raising awareness through online education as web-based modules and training programs regarding CPGs. Furthermore, HCOs should provide them with supportive context and resources for integrating CPGs into clinical practice *" You need to raise the awareness of HCPs through educational workshops, web-based*

modules, and online conferences with the availability of internet access in HCOs". Other HCPs suggested that *" HCOs should embed the culture of evidence-based practice and CPGs with the presence of mentors. In addition, provision of computers with internet facilities, and decision support systems that allow access to CPGs".*

Second theme: *Components of digital education:*

Learning objectives and content:

Most HCPs preferred that the learning objectives should be clear, specific, and relevant to the content *"The learning objectives should be presented to provide a general picture of the topic significance", "The objectives should be clear and specific for the content".* Moreover, HCPs suggested that the content should convey concepts in a simple, relevant, well organized, and provide adequate time for practical examples and reflection. Also, all of them emphasized that the content should include an overview of CPGs. In addition, benefits, and development steps of CPGs *"The content should provide an introduction to CPGs, benefits and, the development steps of CPGs".* Other HCPs reported that *" The content should help us to know about CPGs and their benefits for clinical practice".*

Teaching and evaluation methods:

All HCPs preferred education through web-based modules with illustrative PowerPoint presentations and videos with good quality and low file size. In addition, conducting interactive online sessions with case studies and clinical scenarios for more understanding and application of the practical steps of the CPGs *"I prefer presenting the content through a web-based module with attractive PowerPoint slides and videos rather than lectures".* Others clarified that *"Online learning sessions with clinical scenarios and case studies help us for more understanding of the content without wasting time ".*

Most HCPs reported using a variety of evaluation methods such as pre-post online tests and quizzes for evaluation and reflecting the main objectives *" The evaluation can be conducted through pre-post online tests".*

Third theme; *Principles of digital education:*

Colors:

All HCPs mentioned that they prefer bright and harmonious colors *"Choose the colors that draw attention and are visible to the human eye".* & Other HCPs mentioned *"Use bright colors without watermark and decorations" ,"Choose attractive and well-organized colors".*

Background:

HCPs preferred that the background should be clear, relevant, and consistent *" Background should be attractive* and *clear"," Using background with limited colors".* Other HCPs suggested *"Using background with simple composition and consistent structure".*

Font size, type, and margin:

They reported that the consistency in font size, type, and margins makes the content clear, readable, and differentiates *between* the heading and subheading of the content. Furthermore, they preferred font style as Times New Roman or Arial with a margin of 1.5 *" Font size should be kept between 12 to 14 to be clear and readable", "Use suitable font size and utilize different sizes among heading and subheading".* Other HCPs mentioned that *"I prefer choosing simple, suitable, and attractive font size". Moreover, Line spacing should be at least 1.5 except left 2 inches".*

Illustrations:

All HCPs mentioned that illustrations should be used to improve understanding of the content, make it more attractive, and more likely to be read such as figures, drawings, and tables *"Choose attractive images and figures that are relevant to the content"," Use clear and simple images and avoid irrelevant images", "Use figures that add value to the topic and make the presentation more professional".* One added *," Use obvious images with good quality*

Table 1 *Healthcare professionals' demographic and occupational characteristics (n=30)*

Item	N(30)	%
Age		
20< 35	19	63.3
35 < 50	11	36.7
$\overline{X}$ **(SD)**	33. 80 (4.56)	
Years of experience		
1<15	26	86.7
15<30	4	13.3
$\overline{X}$ **(SD)**	11.76 (4.56)	
Occupation		
Head nurse	17	56.7
Physician	5	16.7
Pharmacist	8	26.6
Previous attending training program of CPGs		
None	26	86.7
Once	4	13.3

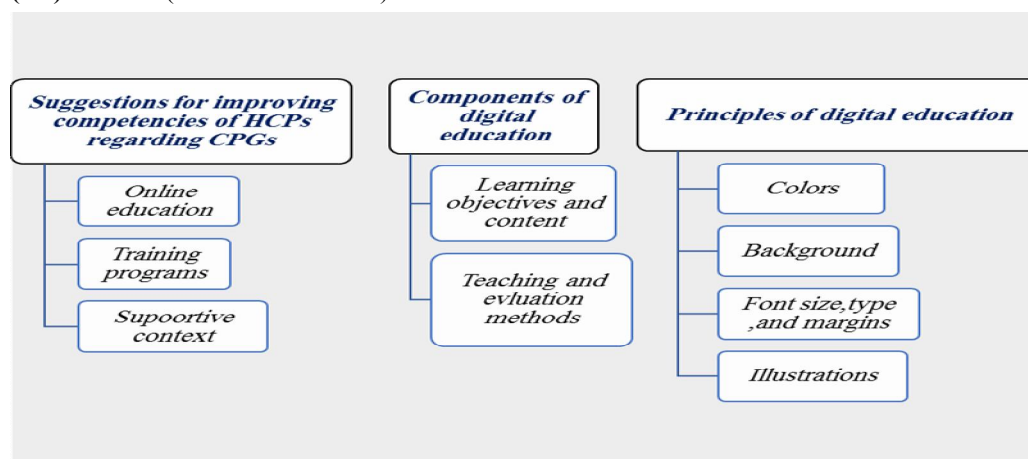$\overline{X}$ **(SD)** = Mean (Standard Deviation)

Diagram 1

Themes of focus group discussions among HCPs regarding suggestions for improving competencies of HCPs regarding CPGs, components, and principles of digital education

Discussion:

Clinical practice guideline is a tool used to guide clinical decisions and enhances the quality of healthcare systems **(Miguel, Silvestre, Imperial, Ho & Dans et al., 2019)**. Despite HCPs having positive attitudes regarding CPGs, their implementation in clinical practice is insufficient due to a lack of competencies for integrating CPGs into clinical practice **(Birrenbach, Kraehenmann, Perrig, Berendonk & Huwendiek et al., 2016)**. Therefore, HCOs should build the capacity of HCPs toward CPGs by conducting educational and training programs to improve competencies regarding CPGs **(Correa et al., 2020)**. Digital education has recently been considered the primary source for educating HCPs **(Tudor Car et al., 2022)**. Efficient standards should be followed in the planning and implementation of digital education with consideration of the participant's views **(Jensen et al., 2023)**. Therefore, the current study aims to explore the views of HCPs regarding digital education for CPGs to ensure the acceptance of this strategy.

Relating to suggestions for improving the competencies of HCPs regarding CPGs. **Tudor Car et al., 2019** concluded that digital education was used as an effective alternative to traditional methods for educating HCPs regarding CPGs.

Moreover, **Correa et al., 2020; Stander, Grimmer & Brink, 2021** showed that one of the most common facilitators was the availability of supportive context with the necessary resources for educating and improving the competencies of HCPs regarding CPGs.

Based on the previous studies, the objectives should be clear, specific, and relevant to the content as participants might not pay attention to the content if they did not understand the objectives (**Mohammed, Ahmed, Mohammed, 2023; Schlegel, 2020).** These findings are consistent with the current study results.

Furthermore, HCPs suggested that the content should convey concepts in a simple, relevant, well-organized according to the objectives sequence, and provide adequate time for practical examples. These suggestions aligned with (**Foster, Shurtz & Pepper et al., 2014: Schlegel, 2020)**. Also, the content should include an overview of CPGs, benefits, and steps for developing CPGs. This is in harmony with **Sultan et al., 2020; World Health Organization, 2014; Scottish Intercollegiate Guidelines Network [SIGN], 2019.** Adherence to this content will improve the competencies of HCPs regarding CPGs.

According to the study results of the teaching methods of CPGs, HCPs preferred digital education with illustrative PowerPoint presentations and videos with good quality and low file size to facilitate understanding of the content and save HCPs time compared to traditional learning due to their work nature and lack of time for attending lectures. These results are consistent with **Mali, 2013.** In addition, conducting interactive online sessions with clinical scenarios and case studies help in obtaining constructive feedback from the participants, motivate them to study, and save their time. These findings are congruent with **Iida et al, 2023** who showed that conducting online courses is considered an easy method compared to traditional methods and does not affect clinical practice time.

Moreover, most HCPs reported using a variety of evaluation methods such as pre-post online tests and quizzes for evaluation and reflecting the main objectives. These findings are supported by (**Laibhen- Parkes, 2014**; **Palmer, Samson, Triantis, & Mullan, 2011).** Evaluation provides the chance for educators and course designers to improve and update the course.

Regarding the principles of digital education, HCPs reported that colors should be bright and harmonious which makes the content more attractive and understandable rather than dull and darker colors. These findings are in the same line with **Lau et al., 2019**. Moreover, HCPs mentioned that the consistency in background, font size, type, and margins make the content clear, readable, and prevent attention distraction. These results agree with **Mali, 2013; Rusmanto & Rukun, 2020**.

Illustrations such as figures, drawings, and tables should be relevant and attractive to enhance the understanding of the content based on HCPs' suggestions. **Lau et al., 2019** corresponded with these results and showed that HCPs preferred illustrations to make the materials attractive. Likewise, **Foster et al., 2014; Karahan Okuroğlu & Ecevit Alpar, 2019** concluded that the content should be presented by using attractive methods with audiovisual materials to facilitate understanding of the content.

Conclusion

The study concluded that most of the HCPs prefer digital education to know about clinical practice guidelines with adherence to the effective principles for designing and implementing interactive digital educational strategies according to healthcare professionals' views.

Recommendations

Based on the findings and conclusions drawn from the study, the following recommendations are suggested:

- Promotion of HCPs' competencies regarding CPGs through continuing education development.
- Designing and implementing a digital educational strategy for improving HCPs' competencies regarding CPGs based on their views.

Acknowledgments

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