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# A stakeholders' perspective on enhancing community pharmacists' roles in controlling non-communicable diseases in the United Arab Emirates

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**ABSTRACT**

**Background:** There is a global call for upscaling and optimising the role of community pharmacists (CPs) in the control of non-communicable diseases (NCDs). In the United Arab Emirates (UAE), where NCDs are classified as a public health pandemic, upscaling CPs contributions has become more critical. Several contextual, professional, and educational challenges constrain the role of CPs.

**Objective:** To synthesise the perspectives of key stakeholders in the UAE healthcare system and propose a roadmap for advancing the role of CP s in controlling NCDs in the UAE.

**Methods:** This research followed a qualitative design using the International Pharmaceutical Federation (FIP) framework for quality assurance of pharmacy profession development. Data were collected using semi-structured interviews with 28 experts and senior leaders, then analysed using the thematic analysis technique with the assistance of NVivo software.

**Results:** The analysis yielded three main themes that outlined the prospective roadmap: education, work environment, and policy. Some of the generated subthemes were establishing accredited NCD-specialised programmes, building a national framework for interprofessional education and collaboration, and upscaling the engagement of CPs in public health platforms and initiatives.

**Conclusion:** Improving the role of CPs in controlling the NCD pandemic in the UAE requires coherent and well-structured multidisciplinary endeavours from health policymakers, educational institutions, and all groups of healthcare professionals, including the CPs themselves.

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## Background

The Non-Communicable Diseases (NCDs) epidemic is one of the most prominent healthcare challenges worldwide. NCDs are chronic health disorders caused by a combination of genetic, physiological, behavioural, and environmental elements (World Health Organization (WHO), 2018). Despite substantial medical advances in the control of NCDs, they continue to pose an overwhelming human and socioeconomic challenge (Ezzati, 2020; WHO, 2021). According to the WHO, NCDs account for 41 million deaths each year, equivalent to 74% of the total annual deaths worldwide. The most critical types of NCDs include cardiovascular diseases (CVDs), cancer, diabetes, asthma, and chronic obstructive pulmonary disease (COPD), as they collectively account for the mortality of more than 80% of patients with NCD before the age of 70 years (Martinez et al., 2020; WHO, 2021).

The International Pharmaceutical Federation (FIP) and World Health Organisation (WHO) have underscored the essential role of CPs across healthcare systems worldwide, particularly their reliable contributions to public health gains regarding healthcare service quality, availability, and economic effectiveness (The FIP, 2022). Despite this, existing evidence has revealed that CPs are still underutilised resources (FIP Report, 2018). Literature suggests that this situation could be a result of gaps in legitimising the role of CPs through proper policies and regulations, or the lack of a professional competency framework to guide CPs formal and practical education (Dolovich et al., 2019; Duggan, 2020; Mossialos et al., 2015)

In light of the persistent underutilisation of the CPs workforce in controlling ever-growing NCDs, the FIP issued a policy statement in 2019 that underscored the central role of CPs in achieving better clinical, societal, and economic outcomes of controlling NCDs worldwide (FIP, 2019). Furthermore, the FIP emphasised the importance of optimising the involvement of pharmacists in this area recommending that the role of CPs include NCDs prevention, screening, interprofessional referral, and pharmaceutical care (FIP Working Group, 2019). In addition, several governments and international agencies have supported the same agenda by calling for developing collaborative work frameworks, applying remuneration models, and integrating NCDs knowledge across all levels of formal pharmacy curricula and professional training (Hindi et al., 2019; Rahayu et al., 2021; Sousa Pinto et al., 2020).

In the United Arab Emirates (UAE), the latest WHO report showed that the four NCDs accounted for 77% of all deaths in the UAE in 2017. Furthermore,

the WHO has estimated that 17 percent of UAE residents could die between the ages of 30 and 70 years from one of the four NCDs (Al-Utaibi, 2020; Alnakhi et al., 2021; Mezhal et al., 2023; WHO, 2018). In the absence of lifestyle changes and with increasing life expectancies in the UAE, several studies have predicted an increase in these rates, which will pose more pressure on the healthcare system, well-being of the community, and economic growth (Alnakhi et al., 2021; Fadhil et al., 2019; Paulo et al., 2019). In response, the UAE National Health Agenda 2021 integrated the prevention and control of NCDs into the national development agenda, and stressed the alignment of the UAE with global commitment to reduce premature NCD mortality by 25% by 2025. Most importantly, the agenda emphasised the necessity of engaging all healthcare professionals to ensure national collaboration and accountability in combating the NCDs pandemic in the UAE (Fadhil et al., 2019). Similarly, several UAE studies have called for multidisciplinary NCD management approaches (Al-Utaibi, 2020; Alnakhi et al., 2021; Mezhal et al., 2023).

The role of community pharmacists in combating the NCD pandemic in the Middle East, including the UAE, has been addressed in several studies (Almansour et al., 2021; Alzubaidi et al., 2018; El Hajj et al., 2021; Medhat et al., 2020; Qudah et al., 2016; Rayes et al., 2015; Sadek et al., 2016; Sulaiteen et al., 2023). A complex range of interconnected educational, professional, and contextual challenges has been identified across these studies. To overcome these challenges, informed strategic plans and roadmaps are needed to support and expand the scope of CPs' roles in combating the NCD pandemic (Obaid et al., 2022). Such endeavours are best undertaken by engaging all concerned health stakeholders (Duggan, 2020; The FIP, 2022). The multidisciplinary engagement of health stakeholders has been proven to foster fruitful discussions, support co-learning, allow various interests to interact, and, correspondingly, produce efficient solutions to address various complexities (Duggan, 2020; Sabater-Hernández et al., 2018; The FIP, 2022). This study aims at synthesising the insights of experts and senior leaders in the UAE-healthcare system to propose a roadmap for advancing the role of CPs in the control of NCDs.

## Methods

### *Research paradigm*

This study considers that understanding a certain phenomenon is a vital element towards changing it. Accordingly, our study embraces the philosophies of two paradigms: pragmatism and interpretivism. In this sense, this study follows the scholarly stream that encourages and values the combination of pragmatism and interpretivism paradigms in the public policy

discipline, including health policy studies (Gilson & Agyepong, 2018; Morgan-Trimmer, 2014; Weible & Cairney, 2018). Further details are presented in Appendix 1.

## Study design

To develop a future roadmap that embraces the visions of the key experts in the UAE healthcare system, a qualitative design using the technique of semi-structured interviews (SSIs) was deemed as the most appropriate approach. SSIs enable rich gathering of dependable data by giving participants the ultimate latitude to share their concerns, perspectives, and recommendations (Guest et al., 2017; Jamshed, 2014).

The outline of the interview guide used in this study followed the FIP's global framework for quality assurance of pharmacy profession development (FIP, 2008). There are three pillars in this framework: policy, education, and practice. Furthermore, this study considered the FIP's suggested scope for pharmacists' professional responsibilities in combating the NCDs pandemic: prevention (awareness), screening (detection), referral, and pharmaceutical care (FIP Report, 2018). Additionally, this study focused on on cancer, diabetes, cardiovascular diseases (CVDs), asthma and chronic obstructive pulmonary disease (COPD). This focus is based on WHO reports that counted the four NCDs above as the main types of NCDs in terms of prevalence and mortality rates (Martinez et al., 2020; WHO, 2021).

## Ethical approval

This study was approved by the Research Ethics Committee at the University of *(x)* (reference number: REC-23-01-25-01). All interviewees were provided with a detailed information sheet about the objectives and protocol of the study, and signed a participation consent form. The names and profiles of all the participants were coded and remained confidential. All codified transcripts and signed consent forms were sorted in a particular electronic repository pertaining to the principal investigator. To protect confidentiality, quotes containing any identifiers were deleted from this study.

## The selection of key informants

The key informants in this research were selected through a purposive sampling technique, which is well known for generating an in-depth understanding when applying structured inclusion-exclusion criteria (Morse, 2020; Patton, 2015). In this study, all official websites of the UAE's health authorities, pharmacy schools, and medical associations were reviewed to identify potential interviewees who could provide rich information about the role of CPs in

controlling the NCDs pandemic in the UAE (Al-Utaibi, 2020; Alslubi & El-Dahiyat, 2019; Alzubaidi et al., 2019; Bodolica & Spraggon, 2019; Paulo et al., 2019; UAE Government, 2023). The research team identified 12 stakeholder groups: regulators, academia, pharmacists (senior management), health industry, health consulting companies, patient associations, payers (insurance), healthcare providers (hospitals and centers), public health associations, NCD regional alliances, and two healthcare professional groups (HCPs): physicians and nurses. As a confirmatory step, during each interview, key informants were asked to nominate the key stakeholders who could have core input or a role in setting a roadmap to enhance CPs' roles in the control of NCDs in the UAE. The answers confirmed the identified groups and no additional stakeholder groups were suggested.

The inclusion criteria for key informants included: (1) Representing one of the (12) stakeholder groups identified earlier; (2) having a rich experience (minimum 10 years of experience) in their respective field; and (3) actively working in the UAE's healthcare system at the time of the study. In addition to inviting representative experts from each identified stakeholder group, three additional critical considerations were addressed in the inclusion criteria: (1) sample selection strategy, which represents regulators from three main health authorities in the UAE: the Department of Health Abu Dhabi (DoH), Dubai Health Authority (DHA), and the Ministry of Health and Prevention (MOHAP; UAE Government, 2023). (2) In the physicians group, the selection strategy ensured that the specialty of participating consultant physicians covered the four main NCDs: CVDs, cancer, asthma, and COPD. (3) Regarding academic groups, the selection strategy considered approaching participants from different academic ranks and universities (academic leaders and pharmacy practice instructors). Information richness and data redundancy (the point of not identifying any further code or information) were considered points of saturation. Thematic saturation was evaluated by two analysts and confirmed by the principal investigator. Data collection ceased only when thematic saturation was achieved and confirmed (Braun & Clarke, 2021b). Further details regarding the data collection process are provided in Appendix 2.

### *Interviews*

The interviews were conducted over five months between April and August 2023. Participants were given the choice to select either virtual or face-to-face interviews; all of them preferred virtual meetings due to their busy schedules. Thus, all SSIs were conducted online using the Microsoft Teams platform. All interviews were video recorded with the consent of the interviewees and then transcribed verbatim (Azevedo et al., 2017).

The questions were structured following the three constructs (policy, education, and practice) in the FIP's framework for quality assurance of pharmacy

profession development (FIP, 2008). The first dimension of discussion was the ***practice*** pillar. In this dimension, participants were asked to describe current CPs practices in the domain of combating the pandemic of NCDs in the UAE. This question was followed by two subsequent questions to understand how these practices are shaped and thus we asked about the challenges that hinder CPs from fulfilling their full professional scope and the opportunities that could empower CPs in the future. The second dimension focused on ***policy*** aspects and all relevant legislation. In this dimension, experts were asked to share their recommendations on how existing legislation could be improved or updated to enhance the role of CPs in combating NCDs. The third dimension focused on ***education*** and how formal and professional pharmacy education, can be improved to equip CPs with adequate knowledge and skills to fulfill their anticipated responsibilities (see Appendix 3).

At the end of each interview, experts were asked if they wanted to add any further related points that had not been addressed during the meeting. This question opened a window for revising and refining the SSI interview questions in the case of any emergent suggestions. All key informants confirmed that they found the discussion logically sequenced and comprehensive.

## *Data analysis*

Two research members analysed the transcripts using thematic analysis (Braun & Clarke, 2021a). The final thematic tree was confirmed after four coding rounds. All rounds were performed with the assistance of the NVivo 20 software. The thematic analysis was performed simultaneously with the data collection activities to help determine the point where thematic saturation was reached.

In the first stage of thematic analysis, two research team members conducted two independent coding rounds. This stage yielded two sets of themes and subthemes, with one set by each coder. The two thematic sets were discussed, reviewed, integrated, and refined under the supervision of the principal investigator. This stage produced three emergent themes (education, policy, and work environment) in addition to confirming emergent subthemes under each theme.

In the second stage of the analysis process, the same reviewers conducted two independent rounds of analysis, in which they reviewed and recoded the transcripts according to the thematic tree resulting from the first stage. At that point, there were some discrepancies in phrasing or categorising certain-subthemes. Thus, the reviewers referred to the principal investigator for the final decision. There are two outcomes of this stage: (a) confirming the final thematic tree (see the Results section); (b) confirming that thematic saturation was reached.

The research team maintained a detailed audit trail that documents all steps of the research process, including decisions made during research

conceptualisation, design, setting the sampling roadmap, data collection, thematic analysis, and preparing the final report.

## Results

### *The key informants of the study*

The data for this research were provided by 28 experts, senior leaders and consultants. Of these, 23 were identified through their prominent positions in their respective organisations, while five were suggested by other participants (snowball sampling) (see Table 1). Each participant represented one of the 12 stakeholder groups identified at the time of the study. It is worth noting that the represented health consultancies are regional agencies that provide a diverse range of services, including market research, business solutions, and patient support programmes. NGOs representatives included local and regional public health entities and alliances.

**Table 1.** The groups of key informants.

| Stakeholder group | No. of key informants |
|---|---|
| HCPs – Physicians | 4 |
| Regulators | 4 |
| Payers | 2 |
| Pharmacy chains – Management | 4 |
| Regional Alliance | 1 |
| Patient Associations | 2 |
| Healthcare providers | 2 |
| Health Consultancies | 2 |
| Pharmaceutical companies | 1 |
| Academia | 3 |
| Health Association (Public Health) | 1 |
| HCPs – Nurses | 2 |
| Total | 28 |

### *Prospective roadmap for improving the pharmacy roles in the control of NCDs in the UAE*

The thematic analysis generated three themes that outlined a prospective roadmap for upscaling the role of CPs in the control of NCDs. These three thematic categories are education, policy, and work environment. Each theme in the roadmap was aggregated into several subthemes. It is worth noting that using the thematic matrix feature in NVivo, we identified numerous shared subthemes and meanings between the three main themes. For example, the recommendation to develop NCD-specialised programmes or certifications is a joint subtheme between education and policy. Similarly, CPs engagement in the NCDs national platforms and initiatives is a shared subtheme between policy and work environment. The outline of the resultingthematic tree is presented in Figure 1.

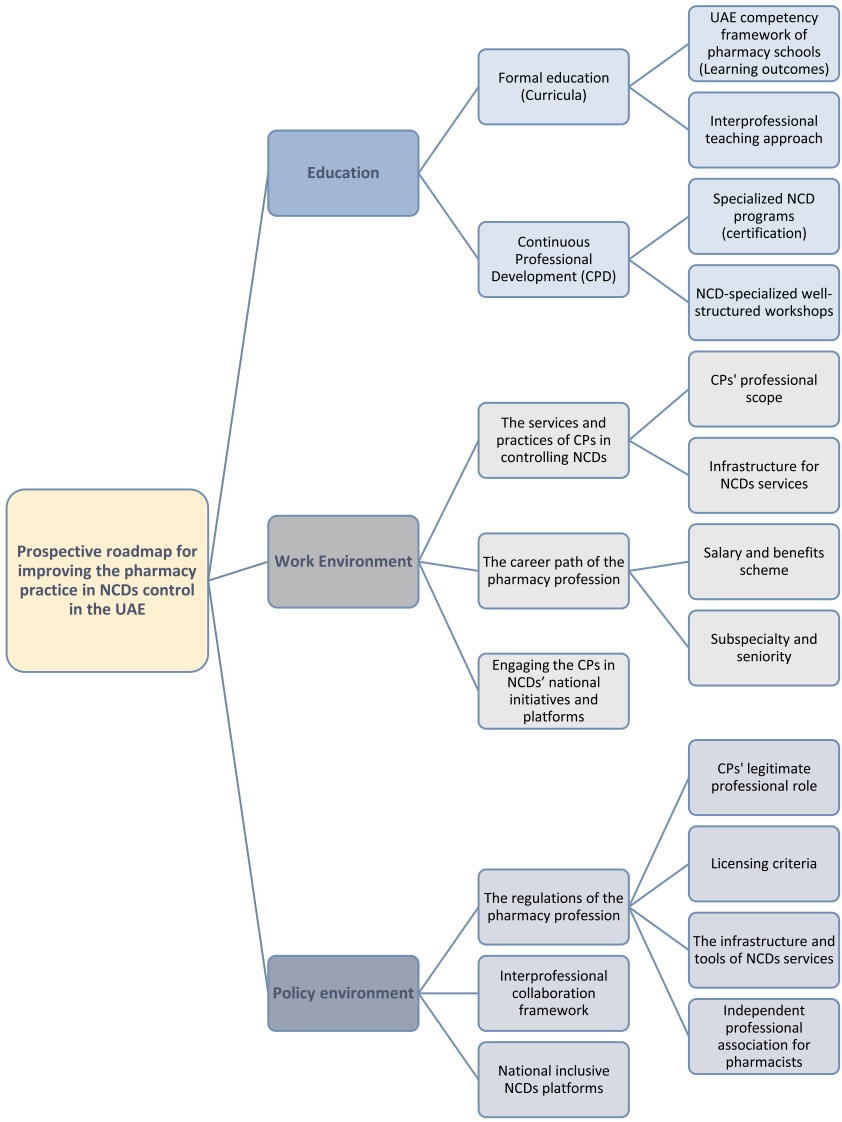


**Figure 1.** A roadmap to improve the CPs' roles in controlling the NCD pandemic the UAE – Final thematic tree. †**CME:** Continuous Medical Education.

## *Education*

All participants agreed that education plays a prominent role in optimising pharmacists' roles in NCD control in the UAE. The meanings coded for this theme can be grouped into two interrelated subthemes: formal pharmacy education (curricula) and continuous professional development (CPD).

***Formal education (Curricula).*** Several experts signified the importance of revisiting the design of the current pharmacy curriculum in the country, specifically learning outcomes (LOs). They suggested that all pharmacy LOs have to be defined more practically to meet the UAE's public health agenda, including NCD control For example, an informant from a patient association said: 'We should not keep these typical, conventional, and general learning outcomes. We must update the outcomes to meet patients', market, and country needs'.

Interestingly, the academicians who participated in this study shared important information about the development of the UAE Pharmacy Competency Framework in 2019. One academician provided some details on the development process of the UAE Pharmacy Competency Framework; he/she said: 'The UAE Pharmacy Competency Framework was a really nice piece of work between pharmacy colleges. We had a representative from each pharmacy college, and we ended up with a competency framework that all pharmacy curricula have to map their courses and learning outcomes against'. However, it seems that this framework's implementation is not optimal yet because of the divergent interpretations and the complexities of assessing the targeted competencies. The following comment that was made by another academic leader explains this point: 'We have already applied this framework in our college, but it is not really easy to make sure that the competencies are met; we read the same document and the same learning outcomes, but we come up with different interpretations'. A third senior academician added additional insights on this saying: 'I think we have to look at the FIP document on NCDs and the UAE Competency Framework for pharmacy graduates. Between these two documents, pharmacy schools can find something to do regarding NCDs. This needs to be addressed in order to revolutionize pharmacy education.'

The second highlighted element in the formal education pillar is the teaching approach. After emphasising the need for a multidisciplinary approach to control the NCDs pandemic, several experts underlined the advantages of adopting interprofessional (multidisciplinary) education as a standard teaching approach within pharmacy curricula and in all other medical curricula. One of these advantages is providing early training on effective interprofessional collaboration related to NCDs management. As one senior nurse said, As one senior nurse said: 'We have the doctor, the nurse, the pharmacist and other professionals in the healthcare system. Unfortunately, each profession is taught in silos, but when we go into the real world of NCDs complications, we have to work together. So why can't we apply interprofessional teaching right at the foundational levels?'.

***Professional education (CPD).*** Numerous experts shared remarks on the current pharmacy CPD programmes and activities. They indicated that the majority of workshops conducted are not related to the CPs' responsibilities. As a senior manager from the pharmacy field stated: 'The majority of current

CPD activities speak about clinical and hospital pharmacy topics which are not related to the responsibilities of community pharmacists or NCDs.' In the same vein, numerous participants underlined that the majority of CPs attend the CPD workshop as a routine step to get the required number of CMEs credit to renew their license. The experts warned that such passive attendance masks the actual level of knowledge and skills of CPs. As one academician notified: 'CME credits are easy to get. However, it does not contribute to the knowledge of whoever gets the CME because people usually do it either for fun and curiosity or mainly to get the renewal of their license'.

Thus, the majority of participants emphasized the necessity of developing pharmacy CPD programs on NCD management based on diligent needs assessment according to CPs aspirations and actual professional responsibilities in the community, including NCD control. As an informant from a health consultancy company put it, 'Pharmacists have to attend topics related to community pharmacy jobs. So, specialized workshops, including the ones on NCDs, are really important; otherwise, we will not be able to grab their attention with a good and special focus on their daily activities in the pharmacy'.

The most repeated code under the professional education subtheme was developing ***NCD-specialized programs***. The majority of participating experts underscored the need for establishing specialized NCD-certified programs in each specific NCD area. Moreover, the experts explained that this should be an official requirement before expanding the roles of CPs in NCD. For example, one physician said: 'We shouldn't give professional flexibility or expand the responsibilities of pharmacists in NCDs without linking this to certain measures and controls via specialized NCDs certificates'. Similarly, an informant from the payers group said: 'If pharmacists want to stand in their pharmacy and educate patients or customers on diabetes or asthma, they have to get a certificate or finish a program about diabetes or asthma'. In their opinion, such certificates can also increase public trust in CPs knowledge on NCDs, as a president of a medical association expressed: 'The idea is to certify NCD specialization performance and to give pharmacists an accredited license so people can refer to them with confidence'. Participants pointed out the importance of setting a legitimate framework for such certification by the UAE's health authorities. Their comments on this point are coded under the policy and governance subtheme.

### *Work environment*

There are three thematic categories under this theme: NCDs control services by pharmacists, pharmacy careers, and CPs engagement in national NCDs platforms and activities.

***The services and practices of CPs in controlling NCDs.*** When interviewees were asked about the current NCDs control services provided by CPs in the

UAE, a common view was that the role of CPs is mainly focused on dispensing medication with little effort dedicated to prevention, screening or referral of NCDs. For instance, one expert from a healthcare provider center commented: 'The pharmaceutical care is already there, but the prevention, the awareness, the referral are not there, and we really need them'. Therefore, most participants recommended integrating the services of NCDs control into the professional daily roles of CPs. In other words, most interviewees stressed that NCDs awareness, screening, referral and management have to be diligently practiced in each pharmacy. The following statement that was shared by a regulator summarises these views: 'Pharmacists today need to push a little bit more when it comes to broadening the scope of their NCDs services. There should be clear job descriptions for the pharmacy team members in each pharmacy, who is responsible for what, who does NCDs awareness, and who does the operational and admin tasks'.

***The career path of the pharmacy profession.*** Several interviewees pointed out the necessity of developing a clear career and development path, coupled with an incentive scheme, for CPs. Experts suggested that this development can be done by creating several job specialisations tailored to cover the full scope of their professional responsibilities in the control of NCDs. This viewpoint is expressed in the following quote shared by a senior pharmacy manager: 'It's really hard to convince someone who has to stay with the same title for 20 years to develop himself. Let's seriously consider the future of pharmacists professional improvement. They will care more about their profession, their education, and their professional and personal development'. A similar comment was made by an academician specialised in the pharmacy practice field: 'There is a huge opportunity to enable pharmacists to step into the NCDs control space, but the opportunity is not being taken because the reward is not there'.

As an anticipated solution, several experts have encouraged the use of NCD service provision as a promotion criterion in the pharmacy field. They believed that such an approach could optimise the CPs' knowledge and skills and, correspondingly, their contribution to NCD control. For example, one informant from a pharmaceutical company said, 'I suggest that pharmacist promotion schemes should be based on the pharmacist's knowledge, competencies, research initiatives, and provision of NCD services. If we leave NCD services to voluntary initiatives, I think the implementation will be deficient as it is now'.

In the same way, several interviewees advised improving wages and benefits in the pharmacy field to make the environment more positive and rewarding for CPs so that they can fulfill their professional responsibilities. For example, one health business consultant suggested applying monetary incentives: 'We have to adopt an incentive scheme for each pharmacist, such as a structured financial incentive. Everyone will look for it'.

***Engaging the CPs in NCDs' national initiatives and platforms.*** Enhancing the engagement of CPs in the UAE's national health platforms and committees on NCDs is the last subtheme under the work environment category. Based on several observations, CPs have minimal presence in NCD public health campaigns and platforms. Thus, most participants stressed that CPs' engagement has to be optimised. For example, a regulator suggested: 'Pharmacists have to be invited and represented officially in the multidisciplinary committees and national NCDs forums. They must also be engaged in the community health centers that are established by civil society, NGOs, or the government'. Another regulator commented, 'There are many national initiatives in the country for NCD prevention and awareness. Pharmacists must participate and be part of these initiatives; they have to be aligned with other healthcare forces efforts to control NCDs in the country'.

While policies and regulations facilitating the engagement of CPs in NCD national committees can provide only a legitimate umbrella, such engagement cannot be effective without CPs' commitment and enthusiasm to be part of such activities. The following quote made by a consultant physician represents thisviewpoint: 'Policies and legislation are important; however, policies and legislation, whatever they are, their effect will be limited unless the pharmacists themselves come into the work area and really work with other healthcare professionals. Pharmacists must be proactive, active, and present in the public health sector, including NCDs'.

### *Policy environment*

There are three subthemes under this theme: the regulations of the pharmacy profession, interprofessional collaboration, and the national NCD dialogue and platforms. Markedly, the thematic matrix results showed that most of the meanings coded into this theme are coherently interconnected with the codes in the education and practice themes. This is linked to the belief that most participants expressed about the critical influence of legislation and formal rules in translating initiatives into actions. As one senior pharmacy manager stated, 'Whatever recommendations we come with from research, they will not change the current situation unless there is a rule, legislation, and formal requirements to direct the system'.

***The regulation of the pharmacy profession.*** The first subtheme in the policy pillar is the interviewees' proposal to revise and update the legislation regulating the pharmacy profession in the country, with specific consideration regarding the roles of CPs in the NCD field.

First, experts highlighted the need for revising the responsibilities of community pharmacists and developing a comprehensive and *detailed scope of practice, translated into a clear job description, for the CPs* to transform their

practices on NCDs from a voluntary basis into consistent, regular activities. Talking about this point, a consultant physician said: 'The main challenge is that if the pharmacists do it (NCD care), they do it voluntarily, and voluntary means that it depends on the willingness of the pharmacist. We need to have a system in place that says that the pharmacists are going to be evaluated and monitored based on providing these services. There should be legislation that consistently requires, allows, and supports pharmacists to do these roles'. Notably, several experts shared the idea of creating a documented policy guide for defining the roles of CP roles in the control of NCD. For example, an informant from a health consultancy company suggested: 'Counselling the patient, educating the public, making awareness about NCD's risk factors – all of this should be in the pharmacists' job descriptions. We have to give CPs responsibilities in a documented and well-described manner'.

On the same point, quite a few participants discussed the issue of confusing health promotion with commercial promotional activities. Those participants signified the importance of including a clear ethical component in the suggested policy guide. The following comment made by an expert from a public health association explains this viewpoint: 'Anticipated policies and legislation should set clear criteria and conditions for pharmacists to differentiate their role in commercial promotion from their role in the control of NCDs'.

Significantly, several experts underscored the value of learning from international experience in this domain and referred to the guidance that has been produced by accredited international organisations, namely the WHO and FIP reports. As one regulator denoted: 'I believe that anything that comes from international organizations is usually accepted and adopted smoothly. Several NCD resolutions have been issued and applied by the WHO and FIP. We can communicate with them and refer to their work.' Notwithstanding, several experts emphasised the diligent adoption of any international standards to ensure that such application is suitable to the professional context of CPs in the UAE. For instance, another regulator commented: 'We have to check how those rules and regulations can be adaptable here and how to customize them to address the challenges in our system'.

Second, most of the informants stressed the need to standardize the *licensing exams* and developing *NCD-specialized accredited certification*. Most of the informants discussed the necessity for health authorities to revise the regulations for evaluation measures and controls in the pharmacy field. In particular, the review and update of the criteria for pharmacy CME credits should be done in a way that effectively reflects and ensures that CPs have the specific pieces of knowledge on NCDs that can enable the provision of optimal patient care and education. As one expert from the healthcare provider group put it, 'To build experts, we must put them under experience, then under certain tests. Anyone can study to pass a theoretical test, but

not everyone can deal with a patient. There should be consistent practical tests and monitoring from health authorities'.

Third, interviewees suggested enhancing *the infrastructure for NCDs services*. This was flagged as a prerequisite that should be mandated by authorities to ensure that all pharmacies have a proper space and tools. For example, a consultant physician said: 'The setting in the pharmacies currently do not support doing proper patient education and consultation. So, every pharmacy must have a small room or isolated area for consultation and education to respect patients' privacy and cultural aspects in the country; this should be even requested through policies'.

Fourth, most of the informants recommended forming an *independent professional association* for pharmacists in the UAE as a legitimate bridge between the CPs in the field and policymakers. Several experts explained how establishing such an entity is a fundamental step towards enhancing the pharmacy profession in general and in the NCDs area specifically. For instance, a senior pharmacy manager commented: 'We (pharmacists) have to discuss with the regulators of the system the roles we can provide in the control of NCDs. We need to explain to policymakers what challenges we have now and how we can overcome them. The challenge here is that we do not have one independent entity to represent us. So, having a pharmacy association at the national level is key to moving forward'. Identically, an academic leader said, 'Pharmacists need an official body that's taking the lead in regulating and advancing this profession'. An expert from a public health association shared the same viewpoint: 'The absence of an independent entity is one of the challenges for the pharmacy profession in the country. Without such a representative, independent entity, implementing any initiative will be really challenging. Having an independent, official, and legitimate entity for pharmacists in the country is the first critical task or step that should be done before any initiative.'

***Interprofessional collaboration framework.*** Numerous experts from various groups have signified the need to develop a clear framework for interprofessional work in the healthcare system. They clarified that such a framework is critical in the CPs role in patient education and referral of NCDs. One physician put it: 'Setting an official framework for interprofessional collaboration and interactions between pharmacists, doctors, nurses and any health care professional in the system is quite important and needed'. A senior leader in the pharmacy field confirmed this point, she said: 'There is no clear guidance or channels for everyone specifically for community pharmacists, how or to whom they can refer the patients. We have to have here clear channels for referrals'. Similarly, a senior nurse suggested that such a framework could be done by defining the roles of each healthcare professional in a detailed, legitimate manner. He said: 'The roles of both pharmacists and

other healthcare professionals should be described in detail. I recommend making it a comprehensive approach at once'.

***National inclusive NCDs platforms.*** Based on several observations, CPs have not been engaged in several NCD public health campaigns and platforms. Thus, almost all of the participants called for policymakers and public health leads to optimise the engagement of CPs in these platforms. For example, a regulator suggested: 'Pharmacists have to be invited and represented officially in the multidisciplinary committees and national NCDs forums. They must also be engaged in the community health centers that are established by civil society, NGOs, or the government'. In the same vein, a president of a medical association discussed the divergent agendas of the different stakeholders in the healthcare systems and correspondingly highlighted how involving all stakeholders, including CPs, in national platforms can optimise the dialogue between all concerned stakeholders and harmonise all the efforts towards NCDs control in the UAE. He said: 'Theoretically, we are all committed to serving the public health agenda in the country, but practically, this agenda is translated according to the different agendas of every sector, from hospitals to industry to insurance to pharmacists. One solution is creating inclusive public health discussion forums. For sure, pharmacists have to be part of these forums'.

In summary, enhancing the roles of CPs in the UAE's journey to combat the NCD epidemic is to be achieved via coherent and well-structured efforts from the CPs themselves, educational institutions that lead the research and education, regulators who guide and control the entire healthcare system, and all other healthcare professionals (individuals and entities) who are the key players in the healthcare field.

## Discussion

Combating the NCD pandemic in the UAE is among the top priorities of the national public health agenda (Fadhil et al., 2019). Despite recognising the prominent contribution of community pharmacists to controlling NCDs, their role has been found to be constrained by multiple contextual, cognitive, and professional elements (Alslubi & El-Dahiyat, 2019; Alzubaidi et al., 2018; Palaian et al., 2022). To the best of our knowledge, this is the first study in the Middle East that has been developed to suggest a roadmap for addressing the identified challenges in advancing the science and practice of the roles of CPs in combating the NCDs pandemic.

The participation of key stakeholders from all sectors of the UAE healthcare system enabled the building of a comprehensive roadmap that connected public health needs with the CPs work environment, pharmacy education system, and policy environment. The mix of participant profiles, expertise,

and insights makes this study valuable and relevant to all stakeholders in a real-world setting beyond the pharmacy career (FIP Working Group, 2019; Franco-Trigo et al., 2019; Gebresillassie et al., 2023).

This study found that the main elements in the journey to enhance CPs' roles in controlling the NCD pandemic in the UAE are the education system, the work environment, and the policy context. The pharmacy work environment and health policy pillars are in line with the FIP's policy statement (FIP, 2019), in which the FIP called for policymakers, governments, and pharmacists to strengthen health systems as well as the pharmacy profession to provide optimal NCD prevention, detection, and pharmaceutical care. Similarly, the education pillar matches the FIP's focus on science and education in its published work development goals (FIP, 2021).

In the education pillar, the responses of key informants underlined the significance of undergraduate and postgraduate needs-based education. All shared recommendations reflect the experts' full alignment with the WHO 2030 vision for the development of the health workforce (WHO, 2016). Additionally, most participants in this study recommended referring to global organisations, namely the WHO and FIP, to address all existing gaps in the current educational system for both undergraduate and postgraduate pharmacists. On this point, several published studies have recommended using the FIP's working development goals (FIP, 2021) as valuable framing tools to effectively identify the core needs and priorities to advance the pharmacy career within the healthcare system (Al Haqan et al., 2017; Bou-Saba et al., 2022; Meilianti et al., 2021).

The suggestion of activating and following the UAE's pharmacy competency framework in the pharmacy schools matches FIP's WDG1 (academic capacity) and FIP's WDG5 (competency development). The same recommendation was raised by the stakeholder-shared vision of a cardiovascular care model conducted in Kuwait (Al-Haqan et al., 2021). In the same vein, a recent systematic literature review on evidence-based patient-centered pharmaceutical care in MENA countries found that the provision of formal pharmacy-relevant education was slow and inconsistent (Boura et al., 2022). Based on these inferences, it can be suggested that future curriculum mapping for pharmacy programmes using the lenses of FIP's WDGs is essential. Such an in-depth structured analysis could generate anchored and feasible, effective solutions and changes in pharmacy curricula and careers.

Applying interprofessional education (IPE) in pharmacy schools is in line with WHO's global vision, which has endorsed this approach in several reports (WHO, 2010). Existing evidence shows that IPE helps students understand their professional roles, build their professional identity, and appreciate other healthcare professionals' roles and identities (Bridges et al., 2011; WHO, 2010). Therefore, the WHO has projected IPE as an essential step in building a collaborative work environment in healthcare systems, which aligns with the

FIP's WDG8 on pharmacy career development (working with others). It is important to point out that a core condition for successfully applying medical IPE is to ensure that the agendas of the IPE programme in all pharmacy/medical/health schools are coherent, designed, and delivered based on public health needs (Thistlethwaite, 2012; WHO, 2010).

Our results underscore the need for a major change in the design, application and assessment of CPD pharmacy educational programmes, specifically regarding the roles CPs in combating the NCD pandemic. This is consistent with several regional studies that reported a significant need to enhance CPD pharmacy programmes in the area of NCDs prevention and control (Alslubi & El-Dahiyat, 2019; El Hajj et al., 2018; Medhat et al., 2020; Said et al., 2022). Moreover, the insights of our study's participants reinforce the global calls to review, revise and upgrade pharmacy CPD agendas and embrace pharmacy professional development as a core component of advanced pharmacy science (Duggan, 2020; FIP Working Group, 2019; Marjadi et al., 2022; Mutati et al., 2022; WHO, 2016)

Developing NCD-specialized programmes for CPs is an outstanding recommendation under the CPD theme. In light of the growing demand for high-quality primary healthcare services worldwide and because CPs are the most accessible primary care providers (Duggan, 2020; Faller et al., 2020), the FIP has set an explicit goal for this matter, namely, the FIP's WDG4 (advanced and specific development). One of the projected pharmacy specialties is NCD sector-specific services and certifications (Duggan, 2020; FIP, 2021; FIP Working Group, 2019). To build reliable, certified NCD specialty programmes, global organisations have called for establishing a solid education infrastructure and ensuring close, multi-sectorial coordination between governments, academia, and industry (Duggan, 2020; FIP, 2021; FIP Working Group, 2019; WHO, 2016).

Regarding the work environment theme, most participants encouraged pharmacists (individuals and organisations) to expand their professional scope by upgrading their services to cover the full range of their anticipated roles in the NCDs field, which are prevention, detection, referral, and pharmaceutical management. Similarly, numerous recent studies in the UAE have signified the need to upscale the pharmacy profession to meet the growing public health needs in the country, including the NCDs pandemic (Alzubaidi et al., 2020; Obaid et al., 2022; Sadek et al., 2016; Tawfiq et al., 2021). All these local recommendations are in line with the WHO and FIP's global endeavours to move the pharmacy career beyond dispensing activities (FIP, 2019; WHO, 2016). Global organisations have invited CPs to change their perceptions and, correspondingly, their actions toward fulfilling their projected responsibilities and roles in the healthcare system (Duggan, 2020; Faller et al., 2020). The proposals made by participating experts in this aspect can be complemented by the FIP's policy statement on the role of

pharmacists in beating the NCDs pandemic worldwide. In that statement, the FIP sets 12 goals and responsibilities. It describes the different types of interventions that pharmacists can and are expected to undertake in NCDs in various areas. Most importantly, the FIP's stated that its member organisations, individual pharmacists, and the FIP's itself are committed to working toward achieving them.(FIP, 2019). This creates a significant opportunity for UAE pharmacists (individuals and organisations) to align their efforts with global endeavours by embracing the evolution of their professional responsibilities and accepting their emergent mission in global and local public health domains (Duggan, 2020; Faller et al., 2020; Sousa Pinto et al., 2020).

Our findings emphasise the centrality of the policy context, which affects all dimensions of education, training, continuous development, and the practice of CPs. This context further underscores the importance of recognising the capabilities of CPs in contributing to the control of the NCD pandemic in the UAE. This recognition founded the proposal of providing multidimensional legitimate support for CPs to fulfil their responsibilities in NCD health promotion, screening, referral, and disease management. Furthermore, the recommendation mirrors the calls of global organisations for governments and policymakers made across several reports and studies (Faller et al., 2020; FIP, 2019; FIP Report, 2018; Hanlon et al., 2018; Sousa Pinto et al., 2020; WHO, 2016).

Regarding the CPs licensing and accreditation criteria and processes, our results show that health regulatory bodies are the most influential and authoritative stakeholders in ensuring that the CPs workforce in the field is credentialed and adequately trained to provide trustworthy patient care. This finding is supported by the WHO and FIP's vision and assignments to governments and health authorities in all healthcare systems. The two global entities have explicitly requested governments and health authorities to integrate CPs required competencies in NCDs control at all levels of CPs education, training, assessment, and licensing (Faller et al., 2020; FIP Working Group, 2019; Sousa Pinto et al., 2020; WHO, 2016). Nevertheless, as several experts have denoted in our study, both the WHO and the FIP have emphasised that updating legislation or adopting any workforce development framework should be contextualised and tailored according to national needs (FIP, 2021; WHO, 2016). Therefore, it is suggested that all cited development mechanisms and strategies to promote CPs roles in NCD control in the UAE must be revised and implemented in light of the UAE's national public health agenda.

On the projected policy interventions to improve interprofessional work on NCDs control, our study found that such interventions are crucial to address the observed practice gaps that challenge CPs and other HCPs in providing NCDs optimal care. Notably, a considerable amount of existing literature affirms the necessity of adopting and applying collaborative approaches in healthcare

systems, specifically in controlling and managing complex, multifactorial, and progressive diseases, such as NCDs (Dolovich et al., 2019; El-Awaisi et al., 2022; Hasan et al., 2018; WHO, 2010). Furthermore, 'working with others' is one of the essential FIP's work development goals (WDG 8). The FIP called on health system regulators to promote and create the right environment for NCDs team-based approaches, in which the role of CPs has to be identified and integrated across all primary care stages (FIP, 2019, 2021; FIP Working Group, 2019).

Overall, all elements of the anticipated roadmap are aligned with the global strategies of the WHO and FIP's to expand the engagement of CPs in controlling the pandemic of NCDs. This alignment highlights the possible pathways for using the WHO and FIP's guidelines as a reference for a structured interpretation and, later, an effective implementation plan of the recommendations made by this study.

## Strengths and limitations

A key strength of the present study the adoption of the FIP's global framework for quality assurance of pharmacy profession development (FIP, 2008) as a research guide. Additionally, our study was meticulously designed, conducted, and reported in accordance with the Standards for Reporting Qualitative Research (SRQR) criteria (O'Brien et al., 2014), ensuring thorough adherence to the standards of rigorous qualitative research methodologies (see Appendix 4, 5). One possible limitation of this study is that the synthesised roadmap has generic features and does not provide specific implementation guidance for any pillar. However, considering the absence of previous roadmaps on enhancing CPs' roles in NCDs control in the UAE, developing such a broad roadmap represents a fundamental step. Future research can build upon this basic roadmap to generate more specific implementation guidance on CPs roles in the NCDs area, including improving education, optimising the respective work environment, and developing essential health policy tools. Another possible limitation is that, despite every effort to involve all key stakeholders in the UAE healthcare system who play key roles in the NCD field, there remains the possibility of overlooking insights from unidentified groups.

## Conclusion

This study outlines the key enablers and barriers for upscaling the workforce of CPs in the UAE towards more focused and effective input and involvement in combating the NCD pandemic. The insights of the participating experts outlined three core pillars of this vision: education, work environment, and policy. Optimising NCD knowledge and competencies across all stages of CPs education and professional career is crucial. Establishing NCD-specialised accredited programmes and certifications in NCD areas is highly

recommended. The adoption of collaborative interprofessional healthcare models is substantially needed. Improving the legislation of CPs' license approval, their professional scope in NCDs control, and the overall work environment is the vital element that considerably interconnects and influences every other component in the envisioned transformation process.

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# Appendixes

## Appendix 1. The elements of the research paradigm

| Paradigm | Pragmatism | Interpretivism |
|---|---|---|
| **Ontology** | Symbolic Realism | **Constructivism** √ |
| **Type of knowledge** | Constructive | **Understanding** √ |
| **Role of Knowledge** | **Useful for intervention** √ | Interesting |
| **Type of Research** | **Inquiry** √ | **Field Study** √ |
| **Data Generation** | **Through Assessment** √ | **Through interpretation** √ |
| **Empirical focus** | **Change and action** √ | **Socially constructed beliefs** √ |
| **Role of researcher** | **Engaged in change** √ | **Engaged in understanding** √ |

References
(**Aliyu et al., 2014**; **Burrell & Morgan, 2016**; **Tuli, 2011**; **Wahyuni, 2012**).

## Appendix 2 Additional details of data collection process

| | |
|---|---|
| The way of identifying the key informants | • (12) stakeholders' groups were identified<br>• Direct identification (30 interviewees/ experts)-<br>• Referral after confirming that they meet our inclusion criteria (10 interviewees/ experts) |
| Number of invitations | • Total sent (40)<br>• Accepted and completed interviews (29)<br>• Included (28) – one interview was excluded because of not obtaining a signed consent form.<br>• Declined (11) – Due to the invitees' unavailability or busy schedule |
| Spoken languages during the interviews | • English (24)<br>• Arabic (4) translated into English during the transcription process. *Note:* None of the 4 interviews was 100% in Arabic but mixed between English and Arabic, as all professional and scientific terms were mentioned in English by both: the interviewer and the interviewee to ensure a common and clear understanding. |

## Appendix 3 The Interview guide

*A brief introduction to the research was provided at the beginning of each interview. At this stage, the interviewer elaborated that the term (CPs' role in the control of NCDs) refers to the four professional responsibilities that are recommended by the FIP: prevention (awareness), screening (detection), referral, and pharmaceutical management. This point was emphasised frequently during the interviews.*

| No | Question | The pillar of the FIP's framework for quality assurance of pharmacy profession development |
|---|---|---|
| 1.a | How do you describe the current practices of community pharmacists in combating the NCD epidemic in the UAE? | Practice |
| 1.b | How these practices can be improved? | |
| 2.a | | Policy |

| | | |
|---|---|---|
| | How do you describe existing legislation regarding the roles of community pharmacists in combating the NCDs epidemic in the UAE? | |
| 2.b | How can these existing policies and legislation be improved? | |
| 3 | How can the educational system in the UAE be improved to promote the roles of community pharmacists in NCDs control? | Education |
| 4 | What are the key enablers (opportunities) for improving the involvement of community pharmacists' in controlling NCDs in the UAE? | Practice<br>Policy<br>Education |
| 5 | Who are the key stakeholders who have (might have) a vital role in promoting the roles of community pharmacists to controlling NCDs in the UAE? | Identifying (confirming) the groups of key stakeholders groups – *Stakeholders mapping and snowball sampling* |
| 6 | Would you like to add any further comment or insight about this topic? | General – Closure (validating the questions) |

## Appendix 4 Researchers reflexivity

Researcher characteristics and reflexivity

All researchers and authors involved in this study are considered insiders due to their knowledge, professional identity, and engagement in the field of the investigated phenomenon. Therefore, several rigorous procedures were established to mitigate potential bias or influence on the research process or study outcomes. These procedures include: (1) Using the FIP's global framework for quality assurance of pharmacy profession development (FIP, 2008) as a guide for the data collection process, (2) Applying a robust purposive sampling technique by carefully referencing local published literature, official governmental, and institutional websites, (3) Conducting four coding rounds independently by two reviewers, with validation and crosschecking by the principal investigator, (4) Interpreting and discussing all study findings in relation to existing literature, and (5) Designing, conducting, and reporting the study according to the Standards for Reporting Qualitative Research (SRQR) criteria (O'Brien et al., 2014)

## Appendix 5 SRQR Ckecklist

| **A Stakeholders' Perspective on Enhancing Community Pharmacists' Roles in Controlling Non-Communicable Diseases in the United Arab Emirates** | |
|---|---|
| ***Title and abstract*** | ***Page/line no(s).*** |
| **Title** – Concise description of the nature and topic of the study Identifying the study as qualitative or indicating the approach (e.g. ethnography, grounded theory) or data collection methods (e.g. interview, focus group) is recommended | Page 1 |
| **Abstract** – Summary of key elements of the study using the abstract format of the intended publication; typically includes background, purpose, methods, results, and conclusions | `Page 2 |
| ***Introduction*** | ***Page/line no(s).*** |
| **Problem formulation** – Description and significance of the problem/phenomenon studied; review of relevant theory and empirical work; problem statement | Pages 3–4 |
| **Purpose or research question** – Purpose of the study and specific objectives or questions | Page 4 (lines 117–119) |
| ***Methods*** | ***Page/line no(s).*** |

| | |
|---|---|
| **Qualitative approach and research paradigm** – Qualitative approach (e.g. ethnography, grounded theory, case study, phenomenology, narrative research) and guiding theory if appropriate; identifying the research paradigm (e.g. postpositivist, constructivist/ interpretivist) is also recommended; rationale** | Research paradigm: Page 4 (lines 121–129). Qualitative approach (design and applied framework): Page 5 (lines 130–148) |
| **Researcher characteristics and reflexivity** – Researchers' characteristics that may influence the research, including personal attributes, qualifications/ experience, relationship with participants, assumptions, and/or presuppositions; potential or actual interaction between researchers' characteristics and the research questions, approach, methods, results, and/or transferability. | Appendix 4 (page 34) |
| **Context** – Setting/site and salient contextual factors; rationale** | Background section: pages 3–4 (lines 81–99). Methods section: |
| **Sampling strategy** – How and why research participants, documents, or events were selected; criteria for deciding when no further sampling was necessary (e.g. sampling saturation); rationale** | Paes 5–6 (159–200) – Table 1 (page 8) and Appendix 2 (page 32) |
| **Ethical issues pertaining to human subjects** – Documentation of approval by an appropriate ethics review board and participant consent, or explanation for lack thereof; other confidentiality and data security issues | Page 5 (lines 149–158)– |
| **Data collection methods** – Types of data collected; details of data collection procedures including (as appropriate) start and stop dates of data collection and analysis, iterative process, triangulation of sources/ methods, and modification of procedures in response to evolving study findings; rationale** | Page 6: lines (195–208). Page 7: lines 252-253. Appendix 2 (page 32). |
| **Data collection instruments and technologies** – Description of instruments (e.g. interview guides, questionnaires) and devices (e.g. audio recorders) used for data collection, if/how the instrument(s) changed over the course of the study | Pages 6–7 (lines 201-231). Appendix 2 (page 32) Appendix 3 (page 33) |
| **Units of study** – Number and relevant characteristics of participants, documents, or events included in the study; level of participation (could be reported in results) | Table 1 – page 8 |
| **Data processing** – Methods for processing data prior to and during analysis, including transcription, data entry, data management and security, verification of data integrity, data coding, and anonymization/de-identification of excerpts | Pages 7—8 (lines 231–253) |
| **Data analysis** – Process by which inferences, themes, etc., were identified and developed, including the researchers involved in data analysis; usually references a specific paradigm or approach; rationale** | Pages 7—8 (lines 231–253) |
| **Techniques to enhance trustworthiness** – Techniques to enhance trustworthiness and credibility of data analysis (e.g. member checking, audit trail, triangulation); rationale** | Page 7: (lines 133–138). Page 8 (lines 254–257) |
| ***Results/findings*** | ***Page/line no(s).*** |
| **Synthesis and interpretation** – Main findings (e.g. interpretations, inferences, and themes); might include development of a theory or model, or integration with prior research or theory | Page 10 – Figure 1 Pages 11–17 (lines 268–580) |
| | Pages 11–17 (lines 268–580) |

| | |
|---|---|
| **Links to empirical data** – Evidence (e.g. quotes, field notes, text excerpts, photographs) to substantiate analytic findings | |
| ***Discussion*** | ***Page/line no(s).*** |
| **Integration with prior work, implications, transferability, and contribution(s) to the field** – short summary of main findings; explanation of how findings and conclusions connect to, support, elaborate on, or challenge conclusions of earlier scholarship; discussion of scope of application/generalizability; identification of unique contribution(s) to scholarship in a discipline or field | Pages 18–21 (lines 581–742) |
| **Limitations** – Trustworthiness and limitations of findings | Pages 21–22 (lines 744–759) |
| ***Other*** | ***Page/line no(s).*** |
| **Conflicts of interest** – Potential sources of influence or perceived influence on study conduct and conclusions; how these were managed | Declared |
| **Funding** – Sources of funding and other support; role of funders in data collection, interpretation, and reporting | Declared |

SRQR reference: O'Brien BC, Harris IB, Beckman TJ, Reed DA, Cook DA. Standards for reporting qualitative research: a synthesis of recommendations. *Academic Medicine*, Vol. 89, No. 9 / Sept 2014. doi:10.1097/ACM.0000000000000388.