A systematic review exploring healthcare professionals' perceptions of take-home naloxone dispensing in acute care areas.

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2024

Title page

Full title: A Systematic Review Exploring Healthcare Professionals' Perceptions of Take-Home Naloxone Dispensing in Acute Care Areas

Running Head: Perceptions of take-home naloxone

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Conflict of interest statement: No conflicts of interest

Funding statement: This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Author contribution table	
Karen Osinski	Conceptualisation, methodology, project administration, investigation, writing-original draft, writing–review and editing, visualisation
Janyne Afseth	Data analysis, supervision, validation, writing – review and editing, visualisation

Abstract

Aims: To explore healthcare professionals' perceptions and experiences of take-home naloxone initiatives in acute care settings to gain an understanding of issues facilitating or impeding dispensing.

Design: Systematic literature review

Data Sources: Cochrane, MEDLINE and CINAHL were searched from 15/03/2021 to 18/03/2021, with a follow-up search performed via PubMed on 22/03/2021. The years 2011 to 2021 were included in the search.

Review Methods: A systematic literature review focused on qualitative studies and quantitative survey designs. Synthesis without meta-analysis was undertaken using a thematic analysis approach.

Results: Seven articles from the United States of America (5), Australia (1), and Canada (1) with 750 participants were included in the review. Results indicate ongoing stigma towards people who use drugs with preconceived moral concerns regarding take-home naloxone. There was confusion regarding roles and responsibilities in take-home naloxone dispensing and patient education. Similarly, there was a lack of clarity over logistical and financial issues.

Conclusion: Take-home naloxone is a vital harm reduction initiative. However, barriers exist that prevent the optimum implementation of these initiatives.

Impact:

What is already known:

- Deaths due to opioid overdose are a global health concern, with take-home naloxone emerging as a key harm reduction scheme.
- Globally, less than 10% of people who use drugs have access to treatment initiatives, including take-home naloxone.
- An optimum point of distribution of take-home naloxone is post-acute hospital care.

What this paper adds:

- There is role confusion regarding responsibility for the provision of take-home naloxone and patient education. This is exacerbated by inconsistent provision of training and education for healthcare professionals.
- Logistical or financial concerns are common and moral issues are prevalent with some healthcare professionals questioning the ethics of providing take-home naloxone.
- Stigma towards people who use drugs remains evident in some acute care areas which may impact the use of this intervention.

Implications for practice/policy:

- Further primary research should examine what training and education methods are effective in improving the distribution of take-home naloxone in acute care.
- Education should focus on reduction of stigma towards people who use drugs to improve the distribution of take-home naloxone.
- Standardised care guidelines may ensure interventions are offered equally and take-home naloxone 'champions' could drive initiatives forward, with support from harm reduction specialists.

Reporting Method: This has adhered to the PRISMA reporting guidelines for systematic reviews.

No Patient or Public Contribution

Key Words: opioid overdose, literature review, healthcare professionals, nursing, take-home naloxone, harm reduction, systematic review

What does this paper contribute to the wider global clinical community?

As opioid overdose continues to be a key global challenge, this review highlights specific areas that can be addressed to enhance or improve take-home naloxone which is a lifesaving initiative for people who use drugs.

PROSPERO 2022 CRD42022358505 Available from:

https://www.crd.york.ac.uk/prospero/display_record.php?ID=CRD42022358505

INTRODUCTION

Morbidity rates due to opioid overdose present a significant public health concern worldwide. In 2019, opioid overdose accounted for 125,000 deaths globally (World Health Organisation (WHO), 2023). In 2020 there were 277 drug related deaths per million population in the United States of America (USA), closely followed by Scotland with 267 drug related deaths per million population (Baumgartner et al, 2022) and then Canada with 171 drug related deaths per million population. These rates drastically outrank other countries, for example Germany saw just 19 drug related deaths per million population the same year (Baumgartner et al, 2022). Interestingly, South American rates of opioid related deaths (and drug related deaths in general) are reported as less than 0.25 per 100 000 people throughout all countries, with a similar phenomenon in Southeast Asia and Afica, the highest rate being Libya with 1.65 deaths per 100 000 people (Ritchie et al, 2022). A factor in this may be the inequality in pharmaceutical opioid distribution across countries, but consideration also has to be given to variations in reporting systems globally and influences from under-reporting and potential media bias (Robert et al, 2023).

Interventions such as take-home naloxone (THN) can decrease the risk of death due to opioid overdose, however, less than 10% of people who use drugs (PWUD) are receiving such treatments globally (WHO, 2023). THN distribution to PWUD and their families is a safe, feasible, and effective intervention for harm reduction with the potential to save lives (Drainoni et al, 2016). There is evidence that healthcare providers who are permitted to distribute THN, do not distribute this after overdose and the reasons for this are unclear (Martino et al, 2020).

Non-fatal overdoses will typically involve an emergency department (ED) in hospital. Non-fatal overdose is a major risk factor for successive opioid-related death (Zibbell et al, 2019). In 2017, 11% of all Scottish opioid-related deaths happened within four weeks of discharge from hospital (Information Services Division, 2018). A retrospective observational study by Weiner et al (2020) found that 5.5% of patients treated for an opioid overdose at a Massachusetts ED died within a year of discharge, and 20.5% of these deaths occurred within the first month. Therefore, an ideal point for disseminating THN kits to patients and their families and promoting overdose recognition is after presenting to acute care settings following an acute overdose.

Substance misuse care has embedded harm reduction since the 1990s when HIV transmission was linked to injecting drug users (Drucker et al, 2016). Harm reduction refers to practices focussing on reducing adverse health, social and economic consequences of both legal and illegal drug use without necessarily reducing drug intake (Drucker et al, 2016). It is recognised that pursuing abstinence as the only acceptable goal of treatment is unrealistic and can be ultimately more damaging to addicted individuals (Oyemade, 2015).

Addiction is recognised as a complex disease with sufferers requiring support and understanding from healthcare professionals (HCPs) to complement the risk management strategies of the PWUD themselves (Oyemade, 2015). However, in many regions, despite supportive care and community initiatives, opioid-related deaths have continued to escalate. For example, in Scotland, these figures have gone from 437 in 2013 to 1092 in 2019 (National Records of Scotland (NRS), 2020).

THN programmes are one such harm reduction initiative introduced in many regions, and several countries have introduced naloxone as an over-the-counter medication in communities and most have some access even if limited to medical settings (WHO, 2023). For example, legislation was approved in the UK in 2015 to permit the supply of naloxone without prescription (The Human Medicines (Amendment) Regulations, 2015). This change in legislation initially only permitted supply from community drug treatment services but now encompasses primary care, prison services, community pharmacies and hospitals (acute and emergency care areas) (The Human Medicines (Amendment) Reglations, 2015). Improved access to naloxone to provide an antidote for opioid overdose for those who are most likely to witness an overdose (primarily PWUD) can dramatically reduce rates of opioid-related deaths (WHO, 2020). As people who use opioids tend to limit engagement with health services due to perceived stigma and mistreatment from HCPs (Biancarelli, 2019), EDs or acute care may be the only opportunity to engage in harm reduction measures with this vulnerable group (Wilson et al, 2016).

There is current literature examining the feasibility and acceptability of THN dispensing focused on community and third sector areas with the bulk of these studies based in North America (Behar et al, 2018; Peckham et al, 2018; Bachyrycz et al, 2019). HCPs in community settings are often uninterested or dismissive of sociocultural explanations for drug use and the value of harm reduction approaches (Ezell et al, 2021) however it is not clear these perceptions are held in acute care settings. Patients have however, reported stigmatised attitudes from both community and hospital based HCPs which has raised feelings of embarrassment or intimidation and a desire to remove themselves from consultations without discussing THN (Miller et al, 2023). From an acute care standpoint, the HCPs primarily involved in discussing THN are nursing, medical and pharmacy professionals, as such these colleagues are the focus of this review.

Patients who survive overdose often struggle to engage with HCPs in acute care settings due to feelings of marginalisation (Elliot et al, 2019). Acute care HCPs additionally report negative effects from working with overdose survivors, expressing feelings of frustration and fatigue (Elliot et al, 2019). A study examining attitudes towards THN programmes in emergency departments (EDs) and hospital settings concluded that a major barrier to THN dispensing in these areas is clinician resistance and negative perceptions regarding initiatives (Barbour et al, 2018). A survey conducted by Beletsky et al (2007) found that 54% of the 563 responding clinicians indicated they would never consider dispensing, or even discussing, THN with individuals who use opioids. However, a survey by Appel et al (2020) examined emergency medicine physician attitudes towards individuals who use opioids before and after implementation of THN training and noted a considerable decline in clinician stigma towards opioid use disorder and an increase in comfort levels with regards to distributing naloxone kits from the department. Bachyrycz et al (2019) echoed this

phenomenon following training for HCPs with individuals reporting reassurance and improved understanding of issues around opioid use.

In acute care areas where THN initiatives have been introduced with training, there is evidence that not all appropriate patients are offered. A study by O'Brien et al (2019) indicated that THN was only offered in half of the opioid overdose presentations to the ED. Similar results were noted in other studies (Eswaran et al, 2020; Mullennix et al, 2020) however these rates were improved by initiating electronic triggers for prescribing or introducing naloxone 'champions' or specialist services.

There is minimal literature examining perceptions of THN and no systematic reviews or meta-analysis studies specifically examining acute care HCPs' views. This review, therefore, aims to accrue evidence concerning acute HCPs' perspectives of THN initiatives to gain a clearer understanding of current thinking regarding opioid use disorders and antidote provision in acute care areas which may ultimately provide a basis from which to improve patient care and service delivery.

THE REVIEW

The main aim is to explore HCPs' perceptions and experiences of THN initiatives in acute care settings by exploring available literature. Findings will facilitate an understanding of experiences that may be used to improve awareness of substance misuse and THN programmes in acute care settings while promoting compassionate and patient-centred care focussing on enhanced health promotion and service delivery to this vulnerable group following non-fatal overdose.

Design

This is a systematic review and thematic synthesis of qualitative and survey-based quantitative research. This was undertaken using a convergent approach as both types of primary studies examined similar questions (Hong et al, 2017). The data was transformed into themes using thematic analysis to synthesise the existing evidence base on HCPs' perceptions and experiences of THN initiatives in acute care areas.

Search Methods

A methodical search of published peer-reviewed literature was performed with assistance from a subject specialist librarian from Edinburgh Napier University. An electronic search of library resources was conducted via subject-specific databases, namely PubMed, Medical Literature Analysis and Retrieval System Online (MEDLINE) and Cumulative Index of Nursing and Allied Health Literature (CINAHL). Years of data collection were from 2011 to 2021 to reflect the years since the THN programmes were widely initiated globally. These were then considered using inclusion and exclusion criteria (Supplemental table 2 (S2)) after duplicates were removed. The electronic search strategy is provided in Supplemental table 1 (S1). Titles and abstracts of retrieved citations were screened by the first author (KO), and full papers of potentially relevant

abstracts were obtained. Then, the full texts of potentially relevant studies were assessed for eligibility against the inclusion and exclusion criteria. Texts that did not meet this were excluded at this stage with the reasons detailed in Figure 1. The reference lists of retrieved articles were also scrutinised and any potential articles were retrieved for further review. The second author (JA) reviewed and agreed on the included and excluded articles. The key search terms used were: 'take home naloxone' or 'take home narcan', 'perceptions', 'attitudes', 'opinion', 'experience', 'view', 'reflection' or 'beliefs' and 'acute care' or 'hospital' or 'emergency department'.

Inclusion and Exclusion Criteria

Studies were eligible for inclusion if they explored healthcare professionals' perceptions and experiences of take-home naloxone dispensing to patients who use opioids in acute hospital settings. HCPs in acute care settings include nursing, medical and pharmacy colleagues. This review included qualitative original primary research studies or relevant survey studies reported in English. Studies which only examined primary care or voluntary sectors were excluded. Reviews, commentaries and brief reports (including letters to the editor) were excluded, although their reference lists were reviewed for identification of primary research articles.

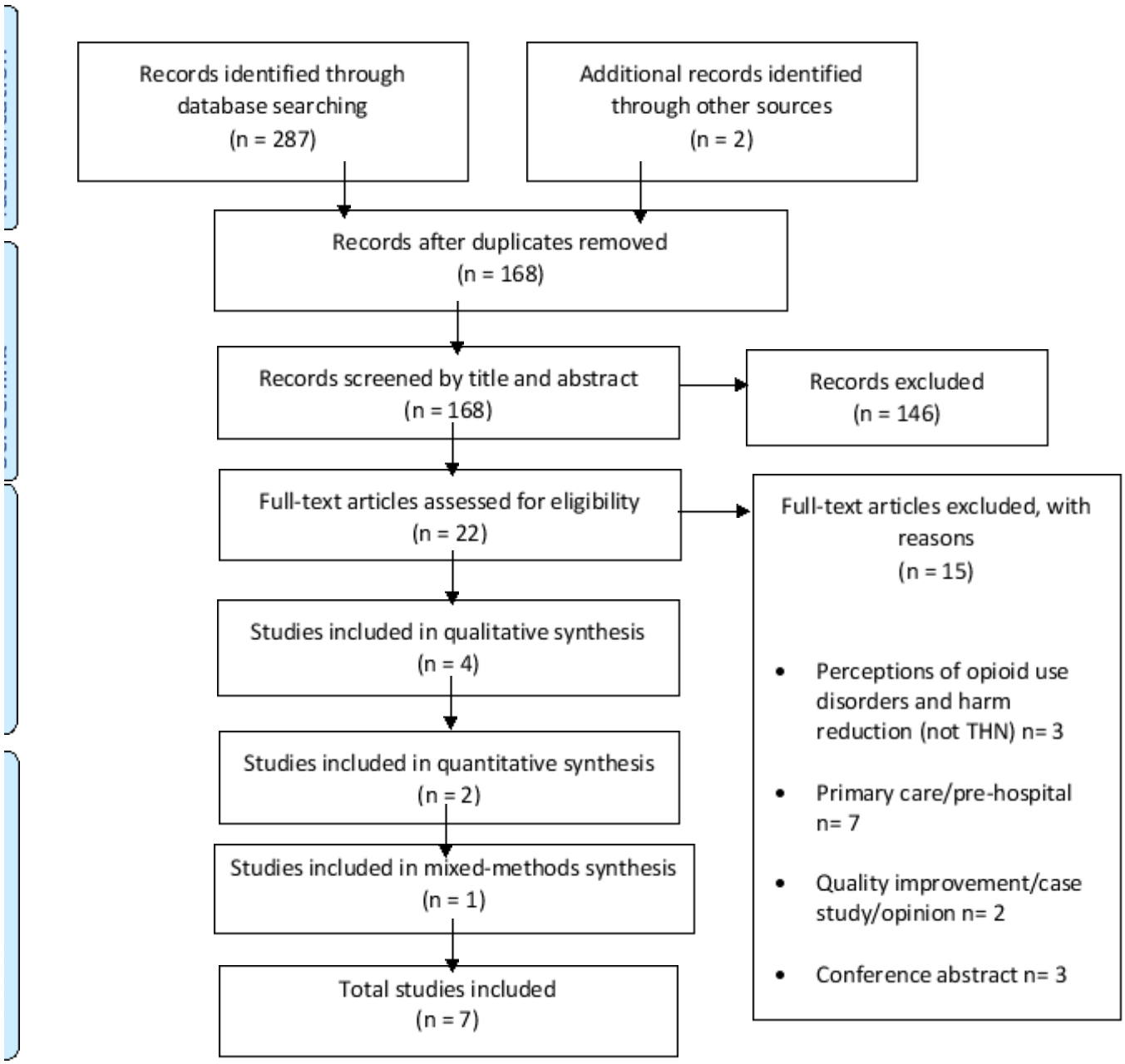
Search outcome

The initial search yielded 287 references and two more through hand searches. After duplicates were removed 168 papers remained. A further 146 papers were excluded based on one or more of the exclusion criteria discussed above. Following these initial exclusions, 22 full text papers were accessed, of which 15 were excluded after close reading. This left a total of 7 papers for review (Figure 1).

Quality appraisal

The Research Critique Framework developed by Caldwell et al (2005) was designed using checklists that can address quantitative, qualitative and mixed methods research using eighteen specific questions. Studies were categorised as poor, moderate or high quality. Two reviewers (KO and JA) appraised the literature and discussed and resolved any discrepancies. As Tod et al (2021) note, the role of critical appraisal is to consider the methodological rigour of the studies included. However, particularly with qualitative research the appraisal can be influenced by the authors insight, or the limitations set externally such as a journal's maximum word count. Therefore, the purpose of this critical appraisal was to provide a critique of the research included, however, we did not seek to exclude any papers through this process as the failure to meet certain criteria may have resulted in the exclusion of useful insights (Tod et al, 2021). Supplemental table 3 (S3) has a column summarising relevant factors considered with critical appraisal. Characteristics of all papers were summarised in data extraction tables alongside overall quality, key findings and strengths and weaknesses ((supplemental table 4) S4).

Figure 1 Prisma Chart



Data abstraction

First, various characteristics of the studies were sorted and tabulated. A thematic approach was adopted as outlined by Parahoo (2014). The collected data was broken down through line-by-line coding undertaken by the first author (KO). The codes were developed that represented the meaning and content of the retrieved studies results and discussion sections. This was aided using tables with codes added and refined as necessary. As these developed the researchers began to examine themes, whichconveyed connotations of the information gathered. This was followed by grouping into manageable themes based on common meaning. This process followed three stages of analysis, namely basic, intermediate and higher, through which the researchers progressed back and forth until a robust understanding of the issues was gained (Parahoo 2014). This resulted in five themes through discussion and consensus of the two researchers.

Synthesis

This thematic synthesis sought to stay as close to the findings of the studies and synthesised them as transparently as possible to provide a collective understanding of the aims of this study. The generated themes were then summarised and reviewed to formulate explanations and recognise discrepancies within the research to justify conclusions and highlight potential implications for clinical practice, service development, education and ongoing research (Parahoo, 2014).

Results

Study characteristics

There were four qualitative studies (Drainoni et al 2016; Gatewood et al 2016; Holland et al 2019; and Punches et al 2020) two quantitative surveys (Lacroix et al 2018 and Wilson et al 2016) and one mixed methods study (Martino et al 2020) included in the review. The studies were undertaken in USA (5), Australia (1) and Canada (1) with 750 participants included in the review with sample sizes of 17 to 459 participants. They included physicians, registered nurses, health promotion advocates and pharmacists. The participants all worked in acute care with four studies focusing only on the staff based in emergency departments.

Holland et al (2019) examined emergency care physician and pharmacist attitudes towards THN and PWUD, clinical challenges and facilitators and barriers to dispensing. Punches et al (2020) focused on emergency care nurses and their perceptions of issues arising with THN dispensing. Gatewood et al (2016) chose to focus strongly on barriers to THN dispensing in acute care from a more detached perspective of practising academic physicians and medical students, whereas Drainoni et al (2016) examined perceptions of ED physicians, nurses, healthcare advocates and pharmacists regarding acceptance of THN initiatives and facilitators and barriers to success. Wilson et al (2016) used a survey design to examine knowledge, attitudes, and perceived barriers to THN in acute care from the perspectives of internal medicine residents. Lacroix et al (2018) focused on the same factors but in emergency care and from the viewpoints of emergency physicians. One paper, Martino et al (2020), combined research approaches to design a mixed-methods study. The authors used a survey design to investigate prescribing practices, attitudes, facilitators and barriers to THN in acute care of physicians and pharmacists from various departments within one hospital. Participants were then invited for interview to provide a more in-depth exploration of the topics. Full details of the studies including participant characteristics, setting, study design, key findings and critical appraisal findings can be viewed in supplemental table (S3). For studies undertaken in the USA, it is important to note that naloxone regulations will differ from state to state.

Critical appraisal

The Research Critique Framework developed by Caldwell et al (2005) resulted in all but one study achieving a moderate score. Martino et al (2020) performed a mixed methods study and thus was subject to both arms of the RCF pathway, resulting in an aggregated score of 72%, or a final score of poor in part due to the

lack of justification provided for the methodology used and descriptions of their methodology. However, no studies were excluded on this basis but due to the methodological limitations of this study, outcomes should be read with caution. The key areas considered in the appraisal of the studies is discussed in supplemental table 3 (S3) and the scoring can be viewed in supplemental table 4 (S4).

Key themes

Through this review process, overarching themes emerged which held relevance for the research aim. Themes were identified by reading and re-reading papers while making notes and coding extracts into groups by how they mapped to the research question. These themes are outlined below and will be discussed in great depth within the discussion.

Inadequacy of training and education

Six out of the seven studies (Holland et al, 2019; Gatewood et al, 2016; Drainoni et al, 2016; Martino et al 2020; Wilson et al, 2016 & Lacroix et al, 2018) identified a lack of training and education as a barrier to THN dispensing within acute care areas. This encompassed poor knowledge and understanding of opioid overdose and naloxone itself, as well as an inability to provide training and education on THN use to patients who use opioids.

Within the Holland et al (2019) study, two participants suggested that clinicians would require upskilling and training both in administration and in counselling patients in use of THN. Only two physicians were aware of recent declassification of naloxone to non-prescription status for community use and there was a widespread inability to identify patients who were eligible or would benefit from THN. This was a similar concern in Drainoni et al (2019) where HCPs were unable to clearly identify appropriate patients. However, participants acknowledged that some foundations had been implemented regarding THN policy, although this was not done systematically due to the fast-paced nature of this ED. Nursing staff had been trained in use of naloxone kits, posters had been put up and there was generally a good awareness of the initiative. Although a THN programme had been initiated in the study by Martino et al (2020), nearly all participants felt unable to prescribe THN due to lack of experience or training thus dispensing rates were poor. Gatewood et al (2016) highlighted a poor understanding of issues around THN and overdose as most participants were medical students and thus not yet prescribers. These respondents indicated they were aware that training would be essential to participate. Both students and physicians were concerned regarding dispensing intravenous medications despite THN being administered intramuscularly or intranasally. Participating academic physicians also appeared reluctant to dispense THN due to poor interpretation of the value, with more concern shown towards preventing opioid drug use over reversing potentially fatal overdose in the acute sense. Studies by Wilson et al (2016) and Lacroix et al (2018) both identified a lack of formal training in THN initiatives, however, most respondents felt they were responsible for providing training to patients and believed this education is effective at reducing opioid-related deaths.

Responsibility for THN provision and patient education

Drainoni et al (2016) discovered that participants were unsure who was responsible for THN provision within the department, with nurses and physicians indicating that it was not part of their job description and that staff already had too many clinical responsibilities. Martino et al (2020) contrastingly found that participants wished to adopt a team-based approach to prescribing THN and educating patients, although physicians mainlyarried this out. Wilson et al (2016) found that the majority of physicians felt that educating patients on THN was their responsibility whereas physicians participating in the Lacroix et al (2018) study overwhelmingly suggested this was a nursing responsibility.

Drainoni et al (2016) also described concerns over unfamiliar policy implementation in addition to issues around electronic prescribing. Similar issues around electronic systems were raised by Martino et al (2020), wherein HCPs have an alert system on patient records to highlight individuals at high risk for opioid overdose. Participants admitted they experienced alert fatigue or felt alerts were activated in cases where THN was not indicated – making it more likely that these alerts would continue to be dismissed.

Logistical/financial concerns

Four studies raised logistical or financial concerns (Drainoni et al; Holland et al, 2019; Martino et al, 2016 & Lacroix et al, 2018). These included unfamiliar protocols, costs to the establishment and following complex steps to receiving THN kits from pharmacy.

Holland et al (2019) reported that, despite overall support for THN distribution from the ED, they encountered hindrances, including the lack of a protocol implementation to distribute THN. However, participants also identified the potential to create documentation, similar to the protocol for epi-pen distribution to patients at risk of anaphylaxis. Participants also highlighted concerns over storage of THN kits and cost to the department and hospital. Martino et al (2020) also found concerns were raised with regards to costs, with beliefs that patients at risk of overdose would be unable to pay for the prescription. The study's authors, however, emphasised that THN was available in this setting at no cost for low-income patients and this was perhaps not widely understood among HCPs.

Another issue raised in Drainoni et al (2016) was physically accessing THN in time due to complexities of ordering from the hospital pharmacy. Participants noted patients would want to leave immediately once informed of impending discharge and would generally not wait for the HCP to follow complicated or unclear steps to obtain a THN kit for dissemination. This was not deemed to be problematic in other studies whereby THN kits were generally available in the department and easily retrieved. However, this does highlight the importance of the availability being considered with this initiative.

Moral issues/concerns

Holland et al (2019) found that a small minority of participants expressed concerns that providing THN would encourage riskier opioid use and felt responsibility for enabling this. Punches et al (2020) found

similar anxieties from participants and concerns regarding potential 'safety-net' effects of giving THN, which were also expressed by respondents in the studies by Martino et al (2020) and Gatewood et al (2016). However, one participant in Gatewood et al (2016) rejected this notion, stating that there is no opportunity to help a patient who dies in the street. However, if you provide THN as a way of bringing them back they have the potential to access further medical care and services. Wilson et al (2016) found that most participants did not believe that THN was enabling (86.5%) or would encourage increased opioid use (92.1%) or more hazardous drug use (84.3%).

Stigma/perceptions of PWUD

Four studies highlighted issues around stigma towards PWUD. This was a particular concern in Punches et al (2020) and Drainoni et al (2016) where small subsets of participants expressed negative perceptions. Punches et al (2020) found a cohort of emergency nurses who believe addiction is a choice and not an illness thus they felt it unfair that PWUD are provided for through THN initiatives whereas other patient populations such as those with diabetes or asthma are not as well catered for. Feelings of under-appreciation by patients whom they have cared for post overdose also emerged. The nurses recognised negative effects of withdrawal occurring post naloxone, but found episodes of verbal abuse difficult considering they have potentially just saved the individual's life. Although the general feeling among ED staff within Drainoni et a's (2016) study was that THN was heavily supported with an overall attitude of enthusiasm, some suggested PWUD are a difficult population to support and are 'not the nicest people'. Additionally, a minority of staff felt patients should demonstrate motivation or worthiness in order to be offered THN, stating that if patients seem uninterested, ongoing dialogue would not be pursued.

Contrastingly, Holland et al (2019) and Martino et al (2020) found that interviewees recognised potential for stigma and actively challenged this. Participants in the study by Holland et al (2019) acknowledged that negative experiences including verbal abuse do arise with patients who use opioids, but this holds little weight when patients' lives are at stake, considering THN can prevent fatal overdose. Also, there was increased recognition that addiction is a disease which should be treated equally and on par with other populations with chronic health conditions. Interestingly, Martino et al (2020) found that participants were wary of instigating discussion around THN for fear of appearing judgemental with regards to drug use. Participants reported avoiding conversations around THN in the belief that the patient would feel a lack of trust, thus jeopardising any rapport built.

DISCUSSION

Within the reviewed studies, overarching themes were uncovered. These were: training and education for THN provision as a harm reduction intervention, responsibility for THN provision and patient education, logistical or financial concerns, moral issues and stigma towards PWUD. The importance of training and education had the potential to impact many of the barriers highlighted in this review. The role and impact of education on the provision of THN was apparent in wider literature.

The inadequacy of training was found in several studies focused on HCPs in community settings (Melaragni et al, 2019; Behar et al, 2018; Peckham et al, 2018). Areas where education needed enhanced included, how to intervene in overdose and pharmacology (Melaragni et al 2019) and how to educate patients, peers and family about THN (Behar et al 2018). However, these studies have also highlighted the need to provide training on harm reduction approaches and explore the stigma associated with PWUD.

This review indicated there are concerns from some HCPs that THN programmes may provide a 'safety net' for those who use opioids to increase their usage or to engage in more risky drug use behaviours. Although these concerns are not supported by evidence (Jones et al, 2017; McDonald & Strang, 2016), the concept of risk compensation is recognised by harm reductionists and should not go unacknowledged (Rojas Castro et al, 2019). Indeed, HCP training could appreciate THN-related risk compensation as a potentiality, even if remote, rather than denying the possibility and refusing dialogue with those who hold concerns. This may allow for more open discussion where evidence can be referred to in an understanding and constructive manner.

Moral concerns that THN facilitates more hazardous drug use or reduces engagement with drug services was also examined by Winograd et al (2020). Participants included police officers, emergency first responders and substance use/mental health service providers. The authors found police and first responders overwhelmingly had stronger beliefs regarding risk compensation than those who had more experience with substance misuse disorders. This highlights that THN training should pay particular attention to the benefits of harm reduction approaches to dispel these preconceived notions within acute care. Indeed, the clinical specialist nurse team described by Mullennix et al (2020) enlisted strong clinical champions within the ED who would assist other HCPs in navigating processes and to alleviate any preconceived biases towards THN initiatives.

Additionally, the role of education was widely discussed as a mechanism to improve the provision of THN and it appears that there have been significant efforts to provide education. Behar et al (2018) undertook a review of studies focused on the feasibility of THN in community settings and almost all provided prescribers of THN with face-to-face training which improved relationships with PWUD. Similarly, Peckham et al (2018) found that community care HCPs receiving THN training felt more comfortable, more familiar, and less apprehensive regarding the perceived consequences of THN. The point of interaction in a hospital after overdose is very different to community settings, however, the impact on knowledge that may facilitate improved provision of THN is likely to be transferable.

Although there is minimal literature to support effective training delivery in acute care areas, Zschoche et al (2018) described the implementation of a successful THN initiative operating from a large acute care centre. A multifaceted education approach to HCPs included electronic training modules, grand round presentations and departmental training including patient education on overdose recognition and management with THN via supplemental modules. Despite limited information on the success of education provision in acute settings, it is clear that this needs to be an integral element and approaches should be evaluated for their effectiveness in key areas such as improving provision and impact on stigma.

This review found it is not always clear whose responsibility THN provision is, and clinical and operational guidance is needed for clarity. This is supported by Samuels et al (2021) who highlight the application of comprehensive regulations for ED and hospital management of opioid overdose, including the utilisation of peer recovery specialists. Although policy implementation has been slowed, the Advisory Council on the Misuse of Drugs (2023) recognises that the ED is an optimal setting for THN initiatives whereby training should reflect local needs. Related to this are issues of cost which re complex to translate between different health systems, however a UK study conducted by Langham et al (2018) found that THN distribution in the UK would not only decrease overdose deaths by approximately 6.6%, but would be cost-effective, with incremental costs well below willingness-to-pay threshold set by decision makers. Minor logistical concerns regarding THN kit access via pharmacy before the patient leaves the department were raised in this review, however, clinical areas globally have declassified THN to avoid involving pharmacy orders (Strang et al, 2019; Eswaran et al, 2020).

While this study was focused on HCP perceptions of THN this should not be viewed in isolation in practice as PWUD, their families and peers must be involved. A study by Kestler et al (2019) analysed reasons offered by patients at high risk of opioid overdose for refusal or acceptance of THN. The authors found that those refusing felt they were not personally at risk of overdose or that they were too busy, whereas most accepters did so out of a desire to save others. This indicates that training should not only focus on the benefit to the recipient of THN but should acknowledge the potential to save a peer's life. Many PWUD have witnessed overdoses previously and have lost friends or loved ones; an improved understanding of overdose recognition and THN use within the drug using community provides some level of empowerment, which is, in turn, integral to successful initiatives (Miller et al, 2022).

This review found variable extents of negative stigma on behalf of HCPs towards PWUD, with feelings of lower regard and resentment more commonly experienced by acute care staff. This is a significant issue as such attitudes will likely reduce collaboration with patients by negatively impacting feelings of empowerment and self-esteem (van Boekel et al, 2013). This inevitably influences treatment outcomes and willingness to engage with medical services. Peckover & Chidlaw (2007) identified that nursing teams acknowledge they may behave in a discriminatory fashion towards this population out of a lack of understanding. Thus, improved dialogue and shared learning between substance misuse services and acute care sectors could facilitate alleviating negative bias. Inter-sector working and collaboration is an invaluable concept to develop more therapeutic relationships and the best possible outcomes for an extremely vulnerable population who are often acutely aware of the stigma against them. There is already an established role for peer recovery specialists in community and harm reduction settings, and this role has been trialled successfully in some areas in the USA and UK (Samuels et al, 2021; Watson et al, 2024). However, Watson et al (2024) found varying levels of responsiveness to peer intervention with patients presenting post opioid overdose as the least likely to engage.

Some European countries have started to look at policies and guidance to improve the provision of THN programmes. Within the United Kingdom, the Scottish National Naloxone Programme enlists naloxone coordinators to provide training and specific support to health boards (Scottish Government, 2014). These coordinators work within harm reduction teams, providing free training for staff who work directly with PWUD, including third-sector staff, hostel staff, prison staff, police, and NHS staff. Programmes initiated in the UK could be argued to be the most accessible, as no prescription is required when compared to other European programmes. Denmark, Germany, Austria, Lithuania, Estonia and Sweden all require a prescription for distributing THN, although Sweden enables nurse prescribing (European Monitoring Centre for Drugs and Drug Addiction, 2019). Only France and Norway have declassified THN to improve rates of dissemination allowing for a broader reach in non-medical facilities and third sector services.

CONCLUSION

This is the first review to consider 'What are healthcare professionals' perceptions of take-home naloxone dispensing from acute care areas?' Key themes were identified that offered insight into perceptions of acute care HCPs. This review acknowledged a deficit in studies exploring acute care HCPs views and, more specifically, nurses. Thus, it is recommended that future primary research focus on this population to progress THN dispensing from acute care areas and improve support and care for patients at high risk of fatal overdose. Additionally, as the bulk of research was conducted in North America, studies must be led within other regions, particularly Scotland, gien the current drug-related death crisis.

Review findings highlighted HCP concerns regarding dispensing THN with a sense that HCPs do not fully understand the needs of these patients with regard to addiction and harm reduction. In order to improve support for this group of patients, recommendations include a more holistic approach, recognising that harm reduction is integral to aiding survival and the potential for future reduction in drug dependence. Training programmes provided or supported by harm reductionists in THN dispensing are essential for a more unified approach to tackling drug-related deaths. In acute care settings, it is important that training around THN provides safe spaces to discuss and alleviate concerns from HCPs regarding risk compensation and to address potential stigmatised beliefs. It would be beneficial to set national standardised levels of care, including THN provision, for patients who present to acute care areas for overdose and drug use disorders to ensure that care is both equitable and achievable (Samuels et al, 2021). It is recognised that acute services are particularly stretched, and so enlisting THN 'champions' who could receive focused education to drive this implementation forward with support from harm reduction colleagues and peer-recovery specialists could aid success. Although care should be standardised, all interventions must be delivered in a way that acknowledges the patient's individuality and priorities so that a therapeutic relationship tailored to the person at risk can be built.

CONFLICT OF INTEREST STATEMENT

No conflict of interest has been declared by the authors.

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Supplemental table 1

Search strategy

	Database, Results, Limits	**Search Terms**
Initial search	Database: CINAHL Results: 125 Limits: 2011 – 03/2021	S1 (MH “Naloxone”)
		S2 “emergency or acute or hospital”
		S3 “dispens* or prescribe* or take-home”
		(S1 AND S2 AND S3)
	Database: MEDLINE Results: 194 Limits: 2011 – 03/2021	S1 (MH “Naloxone”)
		S2 “emergency or acute or hospital”
		S3 “dispens* or prescribe* or take-home”
		(S1 AND S2 AND S3)
Additional search	Database: PubMed Results: 128 Limits: 2011 – 02/2021	(“take home naloxone” or “take home Narcan”) AND “emergency” OR “acute” OR “hospital”

Supplemental table 2

Inclusion and exclusion criteria

Criteria for inclusion

- Papers which focus on acute care healthcare professionals' experiences/perceptions/beliefs/attitudes of take home naloxone initiatives.
- Qualitative studies.
- Quantitative survey designs.
- Undertaken in any country.
- Full text and written in English language.

Criteria for exclusion

- Conference abstract/presentations.
- Quality improvement/audit/case study/opinion.
- Randomised control trials/cohort studies.
- Studies only relating to primary care/third sector areas.
- Papers earlier than 2011

Supplemental table 3

Data extraction

Reference	Participants and setting	Study design	Key study findings	Considerations for critical appraisal	Overall quality
Holland et al (2019)	12 physicians and 13 pharmacists (n= 25) EDs of various hospitals in Australia Participants from New South Wales (n=16), Victoria (n-3), South Australia (n=2), Queensland (n=1), Western Australia (n=1), Northern Territory (n=1) and Tasmania (n=1) 13 female and 12 male subjects	*Qualitative. *Recruitment via membership with pharmacy/emergency care societies plus passive snowball recruitment. *Semi-structured interviews in person or over phone regarding practices and attitudes to discharging patients with THN.	*Positivity towards potential to save lives. *Concern over encouraging risky behaviours. *Negative experience of treating patients who use opioids *Belief that patients would not use from fear of withdrawals or would be unable to self-administer *Lack of awareness regarding identification of appropriate patients *Concern regarding short half-life of naloxone *Logistical barriers regarding need for protocol, storage, cost and time needed for counselling in busy ED *Lack of awareness of declassification of naloxone for home use *Need for training and education	**Strengths:** *First study to explore ED HCPs stance on THN in Australia *Sampled more than one discipline *Snowball sampling useful for identifying appropriate participants *Interview protocol piloted prior to use *Open ended questioning which allowed for in-depth information to be collected *Interviews audio-recorded and transcribed verbatim *Ethics approval sought *Identification and repeated review of themes among all authors until consensus reached **Limitations:** *Recruitment was mainly within New South Wales which may affect transferability. *Many responses were limited due to unfamiliarity with THN *Interviews carried out by clinical pharmacist which may have introduced bias as respondents may feel obliged to offer views in favour of THN	Moderate
Reference	**Participants and setting**	**Study design**	**Key study findings**	**Considerations for critical appraisal**	**Overall quality**
Punches et al (2020)	17 ED nurses qualified for >6 months. 2 EDs – one urban academic trauma centre and one academic community ED, both in Cincinnati, USA.	*Qualitative. *Recruitment via email invite and snowball sampling. *Semi-structured interview – individual interviews (n= 12) and focus groups (n= 12). N= 7 participated in both.	*Opportunity for discussion and brief intervention *Frustration at providing THN for free when other illnesses are not accommodated for *Concern over enabling and condoning drug use *ED not appropriate for dealing with addiction disorders *Concern patient wouldn't use – wastage *Moral distress and feelings of care not being appreciated by people who use drugs	**Strengths:** *Covered two ED sites *Snowball sampling useful for identifying appropriate participants *Mixed individual interviews and focus groups with open ended questions enabling in-depth data collection *Interviews were audio-taped and professionally transcribed *Coding carried out by two researchers followed up by data analysis team *Themes clearly identified *Ethical approval sought **Limitations:** *May not be representative of other settings *Most participants were female, English speaking and lived in Midwestern US *Participants in focus groups may have avoided voicing a differing opinion to their peers *Unclear who carried out interviews	Moderate
Reference	**Participants and setting**	**Study design**	**Key study findings**	**Considerations for critical appraisal**	**Overall quality**
Gatewood et al (2016)	5 academic physicians and 25 medical students (n= 30) Two large academic hospitals in Baltimore, USA	*Qualitative *Physicians selected purposively as involved in education *Medical students selected if responded to advertisement *In-depth interviews (n= 7) and focus group	*Concern that THN does not address underlying addiction *Concern regarding short half-life of naloxone *Concern over providing an intravenous drug *Potential medical risks of THN *Lack of education/training	**Strengths:** *In-depth interviews and focus groups with open ended questions allowing for rich data collection *Used vignettes describing hypothetical clinical scenarios *Interviews and focus groups were digitally recorded and transcribed verbatim	Moderate

		discussions (n= 23)	*Confusion regarding prescription protocol *Concern regarding patient of family ability to recognise overdose *Potential to 'insult' patients by offering THN *Concern over enabling and condoning drug use *Concern over encouraging risky behaviour/providing a safety-net to increase opioid use *Concern that over-antagonism with THN will cause patients to take more opioids *Concern that THN will reduce contact with HCPs as individuals may attempt to treat themselves without seeking medical attention	*Analysis went through three stage iterative coding – third stage involved more than one researcher thus minimising bias *Ethical approval sought **Limitations:** *Small sample set in one city which may affect generalisability/transferability *Difficult to determine perception of barriers to THN prescribing as many respondents were not yet prescribers *Participants in focus groups may have avoided voicing a differing opinion to their peers *Unclear who carried out interviews	

Reference	**Participants and setting**	**Study design**	**Key study findings**	**Considerations for critical appraisal**	**Overall quality**
Drainoni et al (2016)	19 physicians, 26 registered nurses, 3 health promotion advocates and 2 pharmacists (n=50) ED in one hospital, Boston, USA	*Qualitative *Participants 'self-referred' for recruitment *7 focus groups *6 individual interviews *Semi-structured interviews	*Support for THN *Staff education and training foundations *Good availability of resources to facilitate initiative *Patients are able to leave the department with THN kit without waiting for prescription *Absence of clear objective criteria for distributing/identifying appropriate patients *Identifying best time to actually access and distribute THN kit during hospital visit, patients may leave without it if waiting until discharge *Impulsivity and challenging nature of patient group and staff bias towards 'worthiness' of patients *Lack of clarity over who is responsible for THN distribution *Time commitments of training patients and staff how to use THN.	**Strengths:** *Range of HCP groups involved *Interviews and focus groups led by two researchers *Audio-taped and transcribed verbatim by professional transcription company – reduced bias *Use of PARiHS framework for data collection and coding – reducing bias *Clearly identified themes *Ethics approval sought **Limitations:** *Participants were recruited from a centre with high level of access to THN – views likely not generalisable to wider populations. *Participants self-selected for recruitment thus may have had particularly strong views/biases. *Cannot exclude potential bias or social favourable responses in focus groups of peers.	Moderate

Reference	**Participants and setting**	**Study design**	**Key study findings**	**Considerations for critical appraisal**	**Overall quality**
Martino et al (2020)	64 physicians and 8 pharmacists (n= 72) completed survey. Of these, n= 34 participated in interview (30 physicians and 4 pharmacists. Various departments in an urban academic secondary care facility in California, USA. Internal medicine (n=2), family medicine (n=3), psychiatry (n=3), pain medicine (n=3), emergency medicine (n=13), HIV medicine (n=5),	*Mixed-methods *Prospective, cross-sectional *Quantitative survey (n= 72) *Selective sampling used *Follow-up qualitative interviews (n= 34)	*Time-constraints and cost concerns *Lack of patient interest in THN *Unfamiliarity with THN prescribing and lack of education *Concern over diffusion of responsibility to other prescribers *Alert fatigue regarding alerts on electronic records for THN dispensing *Perceived stigma on behalf of patients *Concern that offering THN will compromise trust/rapport with patient *Concern over encouraging risky behaviour/providing a safety-net to increase opioid use *Patients would be unable to self-administer *Improved awareness among people who use drugs regarding THN and increased willingness to ask for it	**Strengths:** *Mixed-methods approach allows for different perspectives on complex phenomena *Open-ended interviews allow for more in-depth data collection *Good sample sizes for qualitative aspect of study *All interviews were audio-recorded and transcribed by two interviewers independently *Coding carried out by two investigators independently *Themes clearly identified **Limitations:** *Small convenience sample *Location within one healthcare facility which may affect generalisability/transferability *Over-representation from ED *Survey and interview designs were not validated *Incentivised participation in form of gift cards – dubious ethics and potential selection bias	Poor

	pharmacy (n=4) and palliative care (n=1)			*No evidence that ethical approval was sought	

Reference	Participants and setting	Study design	Key study findings	Considerations for critical appraisal	Overall quality
Wilson et al (2016)	97 internal medicine residents One academic hospital in Baltimore, USA	*Quantitative survey *Emails sent 147 residents with link to the survey, electronic reminders sent during study period *Data collected anonymously using Likert scale	*Belief that substance use disorder training is important during residency stage *Most feel responsible for providing education to patients re overdose *Willingness to prescribe THN but few respondents have actually done so *Most believed that THN education is effective and does not enable risky drug use *Main barriers are lack of knowledge on how to prescribe and difficulty determining patient eligibility	**Strengths:** *Survey designed to rank statements regarding various beliefs and attitudes regarding overdose and THN *Survey instrument was reviewed by design expert *Cognitive interviews were carried out with three participants to assess ambiguity *Survey was then piloted with 6 participants *Anonymised responses and analysis performed with statistical software programme which may minimise bias **Limitations:** *Single-institution study and small sample size - may limit generalisability/reliability. *Incentivised participation in form of gift cards – dubious ethics and potential selection bias *Survey instrument was not formally validated *Not clear if ethics approval was sought	Moderate

Reference	Participants and setting	Study design	Key study findings	Considerations for critical appraisal	Overall quality
Lacroix et al (2018)	459 physicians EDs of various hospitals in Canada Ontario (n=221), Prairies (n=82), Western (n=80), Maritimes (n=29) and Quebec (n=25) Male (n=281) and female (n=178)	*Quantitative survey *Self-administered and anonymous online survey, reminder emails sent at 2 week intervals *Total of 1658 physicians consented to having survey link sent *Likert scale data collection	*Positive attitude towards THN and willingness to prescribe in ED *Lack of support for patient education *Poor access to follow-up *Inability to provide training to patients on THN *Poor knowledge around evidence-base for THN *Lack of time to complete training during clinical consultation *Lack of training in prescribing practices for THN *Awareness that friends and families of patient who uses drugs would benefit from THN kit provision and training *Belief that RNs or nurse practitioners are best suited to provide THN	**Strengths:** *Large sample *Various clinical sites involved – improved replicability *Pilot survey with cognitive interviews (with practising ED physicians) - amendments made to design *Anonymous responses and chi-square analysis which may reduce bias *Ethics approval sought **Limitations:** *Respondents may have been more inclined to participate if they had particular interest or strong views – potential selection bias and non-response error *Low response rate (27.7%) may limit external validity *Poor response from Quebec – possibly because original distribution language was English not French *Incentivised participation in form of prize draw to win gift certificate *Unclear if ethical approval was sought	Moderate

KEY: ED: emergency department HCP: healthcare professional THN: take home naloxone

Supplemental table 4

RCF scoring

a= quantitative b= qualitative	Holland et al (2019)	Punches et al (2020)	Martino et al (2020)	Gatewood et al (2016)	Drainoni et al (2016)	Wilson et al (2016)	Lacroix et al (2018)
1. Does the title reflect the content?	Y	Y	Y	Y	Y	Y	Y
2. Are the authors credible?	Y	Y	Y	Y	Y	Y	Y
3. Does the abstract summarise the key components?	Y	Y	Y	Y	Y	Y	Y
4. Is the rationale for undertaking the research clearly outlined?	Y	Y	Y	Y	Y	Y	Y
5. Is the literature review comprehensive and up-to-date?	Y	Y	Y	Y	Y	Y	Y
6. Is the aim of the research clearly stated?	Y	Y	Y	Y	Y	Y	Y
7. Are all ethical issues identified and addressed?	Y	Y	N	Y	Y	N	N
8. Is the methodology identified and justified?	Y	Y	Y	Y	Y	Y	Y
9. a) Is the study design clearly identified, and is the rationale for choice of design evident?	N/A	N/A	Y	N/A	N/A	Y	Y
9. b) Are the philosophical background and study design identified and the rationale for choice of design evident?	Y	Y	N	Y	Y	N/A	N/A
10. a) Is there an experimental hypothesis clearly stated? Are the key variables clearly identified?	N/A	N/A	N	N/A	N/A	N	N
10. b) Are the major concepts identified?	Y	Y	Y	Y	Y	N/A	N/A
11. a) Is the population identified?	N/A	N/A	Y	N/A	N/A	Y	Y
11. b) Is the context of the study identified?	Y	Y	Y	Y	Y	N/A	N/A
12. a) Is the sample adequately described and reflective of the population?	N/A	N/A	N	N/A	N/A	Y	N
12. b) Is the selection of participants described and the	Y	Y	Y	Y	Y	N/A	N/A

sampling method identified?							
13. a) Is the method of data collection valid and reliable?	N/A	N/A	Y	N/A	N/A	Y	Y
13. b) Is the method of data collection auditable?	**N**	Y	N	Y	N	N/A	N/A
14. a) Is the method of data analysis valid and reliable?	N/A	N/A	Y	N/A	N/A	Y	Y
14. b) Is the method of data analysis credible and confirmable?	Y	Y	Y	Y	Y	N/A	N/A
15. Are the results presented in a way that is appropriate and clear?	Y	Y	Y	Y	Y	Y	Y
16. Is the discussion comprehensive?	Y	N	Y	Y	Y	Y	Y
17. a) Are the results generalisable?	N/A	N/A	N	N/A	N/A	N	Y
17. b) Are the results transferable?	N	N	N	N	N	N/A	N/A
18. Is the conclusion comprehensive?	Y	Y	Y	N	Y	N	N
TOTAL SCORE	16/18 83%	16/18 83%	18/25 72%	16/18 83%	16/18 83%	14/18 79%	14/18 79%

Yes = 1

No = 0

Unclear = 0

Total score = 18

Final quality score: >90% = high

75-90% = moderate

<75% = poor