Exploring the usability of the COM-B model and Transtheoretical Domains Framework (TDF) to define the underlying helpers and hindrances of evidence-based change in midwifery

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Short report

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Abstract

Background

Despite the ongoing production of new scientific evidence in the field of maternity care, midwives continue to face challenges when translating latest evidence into evidence-informed care, and report reticence towards implementing evidence-based change in clinical areas. This study aimed to explore midwifery leaders’ views on what factors help or hinder midwives’ efforts to implement evidence-based practice, and test the usability of the Capability, Opportunity, Motivation and Behaviour model and Transtheoretical Domains Framework to analyse the barriers and facilitators to evidence-based change.

Methods

This qualitative study formed part of a larger Participatory Action Research (PAR) project designed to improve the processes by which midwives implement evidence-based practice change in clinical areas. Data were obtained from a focus group workshop and individual face-to-face interviews between July – September 2019. Thematic analysis was used to interpret the transcribed data, which were then coded and categorised into meaningful themes.

Results

One overarching core finding emerged from four major categories: Fear can stop change and midwives are reticent towards evidence-based change; however, inter-disciplinary collaboration and midwives in leadership roles is a huge advantage.

Conclusion

This study confirms what is known about the helpers and hinderances of evidence-based change, and provides valuable insight into the usability of behavioural theories and context assessment tools to both diagnose and develop implementation strategies applicable to midwives in clinical areas.

Contributions To The Literature

- The benefits of evidence-based practice (EBP) in healthcare are well reported, however low rates of adoption and inconsistent use of latest evidence in practice remains challenging for midwives working in clinical areas.
- We found the COM-B and TDF, when combined, useful frameworks for developing intervention strategies specific to the implementation challenges experienced by midwives.
These findings provide empirical evidence of the helpers and hindrances of EBP in midwifery and the use IS tools to accelerate the timely adoption of EBP in midwifery.

**Background**

The benefits of adopting Evidence-based Practice (EBP) in healthcare are well reported in the literature (Friesen-Storms, Moser, van der Loo, Beurskens, & Bours, 2015). However, after more than two decades of Implementation Science (IS) research and the development of over 60 implementation theories, models and frameworks, the evidence-to-practice gap remains an issue in healthcare (Gallen, Kodate, & Casey, 2019; Heydari, Mazlom, Ranjbar, & Scurlock-Evans, 2014).

The implementation of behaviour change interventions (such as implementing EBP) are recognised to be more effective when based on theory, compared with those that lack a philosophical approach (Glanz & Bishop, 2010; Hanbury & Wood, 2018). One such behavioural theory, the ‘Capability, Opportunity, Motivation and Behaviour’ model (’COM-B’), also recognised as the ‘Behaviour Change Wheel’ (’BCW’), identifies systems that motivate behaviours at both individual and organisational levels (Michie, van Stralen, & West, 2011). The key premise of the COM-B model is in understanding that Capabilities (an individual’s capacity to engage in behaviour modifications), Opportunity (factors in the environment that influence individual behaviours) and Motivation (the willingness to change) generate behaviours that can be leveraged to influence Behaviour change interventions (Handley, Gorukanti, & Cattamanchi, 2016). In essence, the COM-B model highlights that in order to adopt new behaviours an individual needs to be capable of change, have the opportunity to change and be motivated to engage in new behaviours.

Context assessment frameworks derived from IS research may also provide valuable insight into the challenges of implementing EBP. The Transtheoretical Domains Framework (TDF) builds on the systems identified in the COM-B model to further breakdown the underpinning individual-level barriers and facilitators of evidence-based change, and enhances the development of tailored intervention strategies by facilitating the practical use of IS in clinical environments (Cane, O’Connor, & Michie, 2012). Comprising 14 theoretical domains, the TDF is a well-validated, comprehensive framework that can be used to assess the barriers and enablers of behaviour change and ‘diagnose’ the contextual factors that may influence the change implementation process (Michie et al., 2005). The domains cover three broad elements: individual-level variables, social-cultural variables, and system-level variables that can be mapped to the COM-B systems (Table 2). When combined, the COM-B model and TDF offer IS strategies that maybe useful for midwives wanting to optimise the efficiency and outcomes of EBP initiatives in clinical areas.

Implementation Science knowledge is; however, not commonly taught in midwifery education and although literature on the topic continues to inform midwives’ of the evidence-to-practice problem, it fails to provide clear direction on how to facilitate practice change initiatives (Nilsen, Neher, Ellstrom, & Gardner, 2017). Although there is an established body of literature on the barriers and facilitators of EBP in healthcare, there little is known about midwives’ use of IS resources to facilitate the process (Bayes,
The purpose of this study was to address this uncertainty by exploring midwives’ experience of implementing EBP and testing the usability of the COM-B and TDF in midwifery contexts.

Methods

Study design and population

This study forms part of a broader Participatory Action Research (PAR) project that aims to improve the processes by which midwives implement EBP in clinical areas. Eight midwifery leaders with experience in leading practice change were nominated by their managing Directors to participate in the study. The study involved a focus group discussion and five in-depth interviews, all of which were underpinned by the methodological reasoning of Action Research (Kemmis & McTaggart, 1988). This design enabled authors to gain an insider’s perspective of the implementation challenges midwives’ experience when trying to initiate evidence-based change, which led to discussion about the challenges and uncertainty of how to implement evidence-based change. The focus group and interviews were guided by four discussion points, which were designed to elicit participants’ views on initiating practice change, the factors that helped or hindered the process, what information or IS tools midwives’ used to implement EBP and what midwives require to how these should be packaged for midwives working in clinical areas.

Data collection

The Nominal Group Technique (NGT) was used during the focus group discussion to achieve group consensus on four key discussion points. The NGT aligns with the constructs of qualitative research, proving to be more effective in obtaining participant responses in greater depth and breadth when compared with traditional focus group discussions (Langford, Schoenfeld, & Izzo, 2002). The focus group was facilitated over three hours by authors 1 and 2, wherein discussions were audio-recorded and additional field notes taken. All participants were ascribed pseudonyms and consented to participating in the discussion.

Due to work commitments, three participants consented to an audio-recorded interview, which focused on the same discussion points explored at the focus group. Each interview lasted approx. 60 minutes and no follow-up interviews were conducted. The interviews were conducted by author 1 and data saturation was discussed with authors 2, 3 and 4 following the final interview. The transcripts were not returned to participants’ for comment or correction.

Data analysis

The audio-recordings and field notes from the focus group and semi-structured interviews were transcribed and ‘coded’ through a process of thematic analysis as described by Braun and Clarke’s approach to qualitative research (Braun & Clarke, 2006). A structured categorisation matrix was developed to code the data, which was based on the transcripts from the focus group and interviews. All
transcripts were reviewed for content relating to the following data sets: experience of implementing EBP, helpers and hindrances of implementing EBP, information midwives require to implement EBP and how to package this information for midwives working in clinical areas. Content relevant to the data sets were extracted from the transcripts and labelled as codes. These codes were grouped into major categories and mapped to the COM-B model (also recognised as the ‘Behaviour Change Wheel’ or ‘BCW’) (Michie et al., 2011) and the TDF (Cane et al., 2012). The codes validated the categorised findings and demonstrate consistency between the data presented and the core finding (See table 1).

(Please insert Table 1)

Results

There was unanimous agreement by all 8 participants that midwives’ are passionate about EBP, yet reticent towards change. According to participants, the reasoning behind this was midwives’ limited knowledge of implementation processes and their expressed reticence towards evidence-based change. This was derived from 72 codes and 4 major categories that described the various personal, contextual and operational challenges midwives’ experienced when trying to implement evidence-based change. In addition to these challenges, 5 participants expressed various leveraging factors that facilitated the implementation process: inter-disciplinary buy-in, well defined implementation processes and support from midwifery ‘change-leaders’ were considered key components to successfully embedding EBP in clinical areas.

Comparison of the findings when mapped to COM-B and TDF domains

The findings of this study were mapped to a matrix that combined the COM-B model with the TDF to further breakdown the underlying individual-level barriers and facilitators of evidence-based change (see Table 2). These are presented below using the Capability, Opportunity and Motivation systems of the COM-B model.

Capability

Within the Capability system of the COMB-B model, three of the TDF domains: Knowledge, Skills and Behaviour Regulation (TDF domains 1, 2 and 4) were described by participants’ when sharing their experience of implementing EBP. Participants’ recognised that most midwives’ have limited skills in sourcing, interpreting and translating best available evidence into everyday care. With regard to Behaviour Regulation (TDF domain 14), all participants acknowledged the challenges of implementing evidence-based change during work hours, with the general consensus being “change takes time and you also need to be present with women...you’ve got to manage both and that’s sometimes not easy” (MW7). Additionally, two participants acknowledged the importance of ongoing audit and evaluation to ensure change initiatives were sustained.

Opportunity
Two of the TDF domains (*Environmental Context and Resources* and *Social Influences*) were identified in the codes and major categories as being suited to the *Opportunity* component of the COM-B model. Participants articulated local and organisational hindrances (TDF domain 11) that hindered midwives’ efforts to introduce EBP. Social Influences were explored by MW5 who recalled conversations with a midwife who said: “that sounds like a great idea, and in a perfect world if I didn’t need sleep, have my family and need to pay the bills I would [initiate practice change]...let’s wait till next year” (MW5). The resistance experienced by all participants not only delayed the prospect of initiating evidence-based change but also lengthened the time it took to embed new practices. This resulted in inconsistency in both uptake and longevity of implementation projects.

**Motivation**

When mapped to the COM-B model, the TDF domains identified in this system included: *Beliefs about capabilities* (4), *Beliefs about consequences* (6), *Social/professional role and identity* (3), *Emotion* (13), *Optimism* (5), and *Reinforcement* (7). Significantly, participants expressed reticence towards practice change. This led to aversion by some midwives who felt challenged by the problems associated with initiating evidence-based change. MW7 recalled a conversation with one of her midwives, who questioned “why are we changing things again?...we're busy enough already...I just don't have the time now” (MW7). Participants also reported that many midwives’ were driven by automatic (emotional) responses to change, which often related to their personal view towards EBP and how practice change would affect their workload and professional responsibilities. One midwife quoted “I didn't say I don't believe it (the evidence), I just want to know how it's going to affect my workload and income?” (MW4). Domain 13 of the TDF (*Emotion*) provided a platform for participants’ descriptions of increased stress, fatigue and anxiety in relation to implementing evidence-based change, and their mixed feelings towards initiating EBP in clinical areas. Another significant finding reported by participants’ was that fear stops midwives capacity to initiate change. The TDF proved valuable in deconstructing this further to highlight that many midwives feel reticent towards practice change and implementing new EBP.

Midwives incentives to change were explored under *Reinforcement* (TDF domain 7). MW6 suggested “there’s not enough pre-education to motivate midwives to change...and there are so many changes and innovations...it's difficult to motivate them [midwives] when there is so much change that occurs.” No participants reported the use of other *reinforcement* techniques as articulated within the constructs of domain 7.

Feelings of *Optimism* (TDF domain 5) resonated in the views shared by the majority of participants, as exemplified by MW8, who said “I think they've (midwives) done amazing [sic] with embracing change...we can't lose sight of that.” The constructs within this domain also reflect the *Social Professional Role and Identity* (TDF domain 12), which captures the professional responsibility of midwives’ to lead change initiatives in maternity care settings. MW3 reflected on these issues and commented “when we lead initiatives we get things done...and we don't do things individually, you need buy-in at all levels...and we have to be united...all in or all out.”
Discussion

The widespread implementation of EBP in maternity care remains inconsistent and uncertain, despite best efforts by midwives (Bayes, Juggins, Whitehead, & De Leo, 2019). This study aimed to establish midwives’ views on the helpers and hindrances of EBP, and tested the suitability of the COM-B model and TDF to further explore the underlying factors that contribute to the timely adoption of EBP in clinical areas. Significantly, none of the participants had considered or used IS tools to support their implementation efforts. This perhaps reflects the near absence of midwifery research relating to IS and offers an explanation for the persistent evidence-to-practice gap in midwifery practice settings. The findings of this study resonate with Bayes et al. (2016) who tested the usability of the Consolidated Framework for Implementation Research (CFIR) in midwifery contexts. Authors reported the CFIR to be broadly helpful; although inappropriate in its original form for midwifery contexts. Seemingly, there has been no other work exploring the usability of either the COM-B model or TDF in midwifery contexts; however there are publications that report on the use of the COM-B model and TDF in other healthcare contexts outside the discipline of midwifery (Asimakopoulou & Newton, 2015; Lynch, Luker, Cadilhac, Fryer, & Hillier, 2017).

In regard to this study, only two of the TDF domains were not identified in the findings: Intentions and Goals (TDF domains 8 and 9), which offers some insight into why participant’s experienced the challenges they reported and may provide direction for future implementation processes in midwifery. Although all participants set broad goals to implement evidence-based change, none specifically spoke of the processes they used to plan, implement, evaluate and sustain their implementation efforts. We do no assume these steps were not undertaken, rather highlight the need for midwives to consider goal-setting and action-planning (also termed ‘intervention mapping’) when implementing EBP. Although ongoing audit and evaluation were reported by two of our participants, none articulated how they intended to address behavioural change or recognised the value of incorporating IS processes in their implementation projects.

The findings of this study confirm the usability of the COM-B model and TDF in midwifery contexts, and suggest evidence implementation tools would improve implementation processes for timely evidence-based change. The Expert Recommendations for Implementing Change (ERIC) project has developed a compilation of 68 implementation strategies that provide a foundation for constructing intervention strategies (for example: Education, Training and Environmental restructuring). These are multi-dimensional and useful for targeting change innovations at both individual and organisational levels (Powell et al., 2015). Although not context specific, the ERIC implementation strategy compilation may be of use to midwives wanting to target intervention strategies specific to the implementation helpers and hindrances explored in this study.
This study must be considered within the context in which it was conducted. Although the sample provided sufficient data to generate significant findings in this study, the participants represented a relatively small portion of experienced midwifery leaders from the public health sector and may have benefited from the inclusion of practicing midwives. Thus, it is possible the findings of this study may not reflect the wider implementation issues of practicing midwives in all maternity care contexts.

Conclusions

This study is significant in that it provides valuable insight into the use of behavioural theories and context assessment frameworks to diagnose and develop intervention strategies for the needs of midwives wanting to initiate EBP in clinical areas. This process enabled an assessment of the effectiveness of the COM-B model and TDF, and establishes the starting point for developing intervention strategies specific to midwifery practice contexts. It is anticipated this will lead to the development of new processes that will facilitate closure of the evidence-to-practice gap in midwifery. Midwives are key stakeholders in this venture, thus should be consulted in future research designed to improve the adoption of EBP in clinical areas.

Abbreviations

Implementation Science (IS), Evidence-based Practice (EBP), ‘Capability, Opportunity, Motivation and Behaviour’ model (COM-B), Transtheoretical Domains Framework (TDF)

Declarations

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Authors contributions

A.D.S.B, D.B and J.B jointly designed the study, conducted all analyses and drafted the manuscript. A.D and S.B assisted in data collection and manuscript revisions.

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Ethical approval and consent to participate.

The Human Research and Ethics Committee at XXXXXX in XXXXXX approved the study. No risks to the participants or the researchers were anticipated, and none eventuated.

Consent for publication
Not applicable.

**Availability of data and materials**

The data sets during and/or analysed during the current study are available from the corresponding author on reasonable request.

**Competing interests**

The authors declare there are no financial or non-financial competing interests for this study.

**Author’s information**

Nil disclosed.

**Footnotes**

Nil.

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**Tables**
### Example of coding

| “We had to work around the medical directors, they resisted and weren’t going to let it go, and I think still today they don’t know that it [waterbirth] is in practice” (MW6) | The stumbling block is medical opposition and workplace culture, they are two of the biggest challenges for midwives |
| “People didn’t really have an understanding for evidence-based change, and that brought about a fear...and when there is fear resistance generally follows“ (MW5) | Midwives are reticent towards change: it’s personal for midwives |
| “Our obstetricians often fight against the evidence and midwives get worn down by that...it affects their psyche and the culture...“ (MW1) | Midwives are tired of fighting the battle for EBP, they lack knowledge and the confidence to implement evidence-based change |
| “To get to the point where we actually introduced changes, like midwifery-led care, it was being a squeaky wheel and getting the buy-in from people at the top level to support you to do it [implement change]” (MW8) | Inter-disciplinary buy-in and strong midwifery leadership is a huge advantage |

*Table 1: Example of thematic analysis*
| COMB-B systems                        | TDF domains                                                                 | Example codes                                                                                                                                 |
|---------------------------------------|-----------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| Capability (the individual’s capacity | (1) Knowledge                                                                 | “How do we translate something that we can’t interpret?” (MW3)                                                                               |
| to engage in behaviour modifications) | (2) Skills                                                                   | “There are still a lot of midwives who are unsure of how to read the evidence...they’re not confident interpreting the language despite doing research units at uni.” (MW7) |
|                                       | (10) Memory, attention and decision processes                               |                                                                                                                                             |
|                                       | (14) Behavioural regulation                                                 |                                                                                                                                             |
| Opportunity (factors in the environment that influence individual behaviours) | (11) Environmental Context and Resources                                    | “that sounds like a great idea, and in a perfect world if I didn’t need sleep, have my family and need to pay the bills I would [trial MGP]...why can’t we wait a year?” (MW5) |
|                                       | (12) Social influences                                                     | “it depends on the resources we’ve got and the people available to actually embed change” (MW4)                                             |
| Motivation (the individual’s willingness to change) | (6) Beliefs about Consequences                                             | “why are we changing things again?...we’re busy enough already...I just don’t have the time now” (MW7)                                      |
|                                       | (4) Beliefs about Capabilities                                             | “I didn't say I don't believe it (the evidence), I just want to know how it's going to affect my family time and income?”(MW6)            |
|                                       | (13) Emotion                                                                | “midwives need praise and reassurance to let them know their efforts are being noticed...I think they’ve done amazing with embracing change...we can’t lose sight of that” (MW8) |
|                                       | (7) Reinforcement                                                           |                                                                                                                                             |
|                                       | (5) Optimism                                                                |                                                                                                                                             |
|                                       | (3) Social/Professional role and identity                                   |                                                                                                                                             |
|                                       | (8) Intentions                                                              |                                                                                                                                             |
|                                       | (9) Goals                                                                   |                                                                                                                                             |

Table 2. Example of the COM-B model mapped to the TDF and participant codes.

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- SRQRChecklist.IS.docx