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Abstract

Purpose: Skilled supervisors are crucial to the development of new researchers. A variety of institutional perspectives exist regarding prerequisites for effective research supervision, yet little is known about this subject from perspectives of research supervisors themselves. Mixed methods designs offer the potential to integrate various data collection and analyses procedures to rigorously investigate complex social constructs such research supervision and to design tools to evaluate needs and readiness. The present study aimed to develop and initially test an instrument that explores needs and readiness of research supervisors using an integrative mixed methods design.

Methods: Drawing on a blend of socio-cognitive theories an integrative exploratory mixed methods approach was adopted. Interviews, focus groups, Delphi technique and survey were utilized. Self-rated needs for effective research supervision were completed by a convenience sample of research supervisors. Qualitative data were analyzed using inductive content analysis.

Results: Findings from all data sets indicate that research supervisor needs are multifaceted and indicative of readiness. By widening the range of research methods used to explore the issues, needs and readiness were subsumed under general thematic headings of cognitive, interpersonal, administrative and scientific domains.

Discussion: Research supervision can be conceptualized as being embedded in a comprehensive theoretical framework in which components of perceived cognitive skills, personal beliefs, behaviors, administrative and environmental factors work together to determine needs and readiness. Utilizing rigorous data collection and analyses methods that integrate quantitative and qualitative data is recommended to develop an instrument to determine needs and readiness. To achieve optimal practice in research supervision, development should be based on well-specified basic requirements and needs of supervisors built on a methodology rooted within the mixed methods paradigm. Further data and analyses are needed to ascertain whether the identified thematic variables can be replicated in a second sample drawn from other populations and subcultural groups.

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Keywords: Research supervisors; Needs; Readiness; Mixed methods

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1. Background

Supervising students undertaking research projects at levels from undergraduate projects to doctorates is a significant part of the work of academics. Supervision at any level is widely recognized as complex and multidimensional. Fostering research capability in students requires high quality supervision.\(^1,2\) However, although there have been notable developments in research training, supervision and funding in recent years, high attrition and less than ideal completion rates have been attributed to poor quality supervision.\(^3,4\) To improve completion times, reduce attrition and generally improve levels of satisfaction, many higher education institutions have published lists of supervisory responsibilities, tasks and activities which are typically disseminated in related policies and procedures.

According to Pearson and Brew\(^5\) however, the difficulty with such lists is that “...they range from the general to the particular and mix technical research skills with those supposed to enhance employability more generally” (p.137), making it difficult to identify priorities and appropriate professional development strategies. Furthermore, although there are many opinions regarding roles and responsibilities of research supervisors, there is little published literature in the area of needs or readiness assessment of research supervisors from their own perspectives.

As revealed in the different dimensions of the topic adopted by researchers, supervision generally has various definitions, functions and forms of delivery.\(^5,6\) Most definitions are related to practice-based supervision in teaching, social work, psychology, counseling and clinical healthcare contexts. In health-care contexts, the emphasis is on the promotion of professional development and maintenance of patient/client safety. Nevertheless, a definition that is reflective across professions and which has most relevance to research supervision is that of Proctor (cited in Kilminster and Jolly\(^6\)) who outlined three basic functions of supervision – normative (administrative), formative (educational) and restorative (supportive). Research supervision can therefore be defined as a pedagogical, administrative and facilitative process.

Indeed, some authors see supervision as in part or wholly, a form of teaching and consider that important roles of a good educator is to be a research supervisor, role model, mentor and facilitator in meeting students’ needs to fulfill their research projects effectively.\(^7\) Pearson and Kayrooz\(^8\) also conceptualize research supervision as a facilitative process requiring challenge and support. In contrast, others maintain that the emphasis in research supervision is less on teaching or mentoring and more on overseeing, evaluating performance and directing.\(^9\) Undoubtedly, there are often overlaps and as Ford and Jones’ point out, this means that in some situations supervisors may also fulfill the role of a mentor when promoting the professional development of their research students or switch into an instructional mode where necessary.

In practice, application of the three above mentioned components will be dependent on a number of variables including personal style, socio-cultural environment, intellectual level and characteristics of supervisor and supervisees, etc. Furthermore, tasks and activities at undergraduate and postgraduate supervision levels will include varying degrees of teaching, mentoring and coaching the research process, supporting and progressing students.

A definition focusing more on the evaluative/monitoring aspects of supervision provided by Bernard and Good-year\(^10\) states that supervision is: “An intervention provided by a more senior member of a profession to more junior member or members of that same profession. This relationship is evaluative, extends over time, and has the simultaneous purposes of enhancing the professional functioning of the more junior person(s)…”(p.8).

Both research supervisors and students may have different preconceptions of what the supervisor role should entail and the ideal characteristics of each side of the equation. Similar to the old teaching adage ‘see one, do one, teach one’ being active in research is no longer seen as a sufficient pre-requisite for effective supervision of research. According to Remes et al.\(^11\) the most appreciated qualities of the supervisor from students’ perspectives were scientific competence, sufficient amount of time for supervision, encouragement, social skills and good interpersonal relationships. Supervisors therefore not only need professional expertise generally and in specific discipline areas of the students’ research, but also personal qualities which enable them to communicate effectively and establish rapport with their students.\(^12\)

Most universities are now quite explicit in their descriptions about quality research supervision and the roles and responsibilities of both students and supervisors.\(^13\) Most organizations also now recognize that the development of skills and understanding in this area is potentially a long-term investment in the institutional culture and provide induction and training for this important role.\(^14\) These include a range of programs ranging from half a day to a longitudinal series of educational activities lasting up to a year.

Against a backdrop of varying definitions and understandings about the functions and purpose of
research supervision, personal perspectives of what it means to be a research supervisor and whether one has prerequisite knowledge, skills and attitudes are important considerations.

In planning or designing any professional improvement activity a critical first step is a needs assessment. This involves the systematic collection, review and analysis of data or information that identifies the knowledge and skills required for staff to perform their designated roles. Learners, whether health professionals or students, are expected to identify their own learning needs through a process of on-going self-assessment and reflection. Educationalists strongly emphasize the importance of needs assessments to ensure that learning outcomes are related to the needs of participants and are realistically achievable.

The purpose of this paper is therefore to outline the process and outcomes of developing a quantitative instrument using an integrative mixed methods design to explore the needs and readiness of research supervisors to effectively fulfil perceived supervisory roles and responsibilities. We hope it will provide a basis for continuing research and discussion about the nature and assessment of research supervision competencies.

Specific primary questions that guided the study included: first, What are the perceived prerequisite needs of research supervisors? second, Can we safely infer research supervision readiness by interpreting supervisors perceived needs? The study draws on data acquired through a mixed methods approach, conducted as part of a case study in Saudi Arabia.

2. Methods

2.1. Theoretical framework

This study utilizes many educational theories including orientations of socio-cognitive learning, self-efficacy, experiential, reflective and communities of practice theories. There is little explication of theoretical frameworks or orientations in the literature regarding research supervision. If however, as indicated above, research supervision shares similar normative, formative and restorative functions with other disciplines, it is reasonable to borrow from theories applied in other helping professions such as counseling psychology. An underlying characteristic and assumption of the following theories is that learning involves social participation.

Since academic competencies and achievements depend not only on abilities and aptitudes but also experience; at its simplest, research supervision can be seen as a form of experiential learning. Before Kolb, Dewey was perhaps the most famous proponent of experiential learning, proposing that experience should be a central component of the educational process. Experiential learning is based on the importance of personal experience and reflecting on and in learning from the experience can also be transformative. The Experiential Learning Model is thus based on the existence of four learning modes – concrete experience, reflective observation, abstract conceptualization and active experimentation. The knowledge of practitioners is an accumulation of experience, reflection, actions, conversations with peers, etc. Typically, in research supervision the work of the supervisee is reviewed, questioned, considered and critically reflected upon, supervisors additionally consider their own experience, experience of others, actions, beliefs and assumptions in order to integrate learning into future practice.

Individuals may possess much knowledge and experience but may feel unable to engage in tasks productively because of doubts about capabilities or competencies. Since experiential learning is based on the importance of personal experience in the learning process, it should also be based on reflection and self-efficacy. Perceived self-efficacy is a prominent feature of socio-cognitive theory. The theory includes both cognitive and behavioral aspect because it covers attention, memory, and motivation. Bandura asserts that we learn by observing each other and that our personality develops through interaction between environment, behavior and psychological processes.

In contrast to Kolb, Bandura believed that modeling can have more influence than direct experience. The four variables that are involved in modeling are attention, retention, reproduction, and motivation. For example, in the context of research supervision, supervisors’ attention to the role and motivation may affect their interaction with students.

Self-efficacy is also associated with reflection and evaluation of ones competencies in communities of practice. Wenger asserts that communities of practice “are groups of people who share concern or a passion for something they do and learn how to do it better as they interact regularly”. We are all involved in multiple communities of practice either as members or at the periphery.

2.2. Study design

The present study focuses on exploration of needs and readiness of research supervisors. The perspectives of research supervisors themselves are therefore crucial.
for such an assessment; hence a mixed method approach was adopted as an exploratory case study approach. Mixed methods research is an approach to knowledge (theory and practice) that attempts to consider multiple viewpoints, perspectives, positions and standpoints.20

The research design utilized in this study consists of four distinct approaches including seeking expert opinion, focus group discussion, Delphi study and quantitative survey. The approaches are described as follows:-

2.2.1. Seeking expert opinions

Seeking expert opinion as a starting point for generating information about the determinants of effective research supervision. Preliminary draft questionnaire outlining background information skills required of supervisors of undergraduate and postgraduate research was presented to participants. They were invited to identify important aspects/the key roles of research supervisors as well as relevant domains that could form sections or subsections of a questionnaire. Notes were taken and checked by the researcher.

The content analysis method21 was used in analyzing data. The aim was to identify variations in perspectives. Following analysis of outcomes, comments and domains were reviewed by the first and second authors and the preliminary draft questionnaire was modified. A focus group session was planned with the agenda of "Exploring Research Supervision Experiences and Needs".

2.2.2. Focus groups

A set of three main trigger questions were identified by the first authors to facilitate the group discussion and to assist future questionnaire development. The meeting was held during the 2009/10 academic year at the College of Medicine, King Saud bin Abdul Aziz University for Health Sciences (KASU-HS). A group of five medical educators and faculty members who were involved actively in research supervision of undergraduate and/or postgraduate students were invited to participate. Questions guiding focus group meetings included: What in your view are the competencies of a good research supervisor? What in your view are the problems facing research supervision? 3. What suggestions, solutions or recommendations would you make?

The focus group meeting was audio taped and lasted 1.5 h. The audiotape was transcribed and analyzed using thematic analysis independently by the first and second authors. Transcriptions were compared with hand-written notes. Themes were identified, suggestions for questionnaire improvement studied and modifications made accordingly. Independently, a second transcriber confirmed the emerging themes.

2.2.3. Delphi technique

A modified Delphi technique was carried out over a series of two rounds and conducted with a panel of 37 participants; 25 local and 12 international medical education experts of different backgrounds from USA, Europe, Australia and the Middle East. In this study, "expert" was defined as a local or external individual who had relevant research supervision knowledge and experience and whose opinion is respected by their peers. External participants were e-mailed via the chairman of the Department of Medical Education at King Saud bin Abdulaziz University for Health Sciences (Riyadh). All participants were asked to rate a pre-determined list of research supervision activities and tasks as on a scale of 1–5, where 1 = Not important and 5 = Essential requirement for effective supervision. Additional items were requested and suggestions were invited. Items were checked for duplications or repetitions and grouped under relevant headings. The first round commenced whereby the questionnaires were sent via individual e-mails together with a covering letter explaining the task requirements to all respondents (i.e. critiquing the contents of the questionnaire and adding items). In the second round, focus was on rating the items. The questionnaire was sent electronically to panel members who responded to items individually and independently and returned electronically or in person to the first author. Due to the small number of Delphi participants and the ordinal nature of the data, median ratings were calculated.

2.2.4. Survey questionnaire

Following analysis of interview, focus group and Delphi outcomes, contents of the questionnaire were formulated and modified. A convenience sample of 60 eligible research supervisors including faculty members and hospital consultants was identified from the College and Hospital records. All participants were communicated with, and sent questionnaires via e-mail or personal delivery. Quantitative data from the pilot study were entered in SPSS version 16 for descriptive statistics and Cronbach's Alpha was calculated to determine the internal consistency of the questionnaire.
3. Results

This section describes findings from each of the four study approaches. Italics indicate quotations from the qualitative data.

3.1. Seeking expert opinions

During the planned meeting three main categories were identified (Demographics, Research Experience, Research Supervisory Needs). Under the broad heading of Research Supervisory Needs 18 items were generated under the subsection of administrative and scientific needs. Participant comments regarding Research Supervisory Needs included: supervisors need time to do it, they have to have the basics of research steps; supervisor personal abilities.

3.2. Focus group

Five participants constituted the focus group. Using thematic analysis of the semi-structured interviews confirmation of the three main categories of the questionnaire and their subsections (themes) (i.e. administrative and scientific needs) were achieved. In addition, identification of a new (theme) subsection of the interpersonal skills and requirement resulted. Hence, a total of 31 checklist items were identified (18 + 1 additional in the administrative section and 12 items under the interpersonal skills).

Examples of comments from individuals in the group include:

“Supervisors need competencies and personality traits (particular attitudes)”
“Research supervisor needs to be a role model”
“Students’ Rights … it is a learning opportunity”
“Research supervision requires (protected) time and efforts outside (normal duties)”
“FD is doing a great job for faculty except for research supervision” (FD = faculty development)
“Lack of administrative support e.g. statisticians, recognition….etc”.

3.3. Delphi rounds

Round I: A total of 37 questionnaires were distributed. Of these 30 were returned, (83% response rate). Ten out of 12 international experts responded; of these eight completed the Questionnaire with some additional items and two only critiqued and commented on it.

Of the local group 20 out of 25 responded (80% response). 18 returned completed questionnaires and two out of 20 gave only comments without answering or rating the items. This resulted in 25 additional items, (nine items in the administrative, 12 in the scientific and four in the interpersonal sub-categories). This resulted in a total of 52 items in the Questionnaire.

Round II: Following refinement in round I, the Questionnaire was sent back to the same 37 participants, responded (62% response rate). A few additional comments were taken into consideration and item ratings were entered in SPSS version 16. Frequencies and percentages were calculated and a cut-off level (75%) of the items rated very important and essential was included. This resulted in a reduction of questionnaire items (i.e. a total of 38 items).

3.4. Survey questionnaire results

The final questionnaire consisted of four main sections: Demographics (participant characteristics), research training experience, supervision experience and Research Supervisory Needs. In the pilot 52 completed questionnaires were returned (response rate 87%). Males accounted for 2/3 of the sample and more than 88% were Saudi. Out of the total sample 94% were consultants and 77% had academic titles. The median of their academic involvement was 7.5 years range (1–30 years) and majority were involved in both under and postgraduate education (85%). 61.5% had some research training experience in the form of courses, attending seminars or workshops (55.8%), some as part of postgraduate education and training (5.7%). On the other hand, 38.5% of the total sample had no research training. The median number of proposal writing and publications were 3 and the range was between 0 and 25 and 0 and 42 respectively. 59.6% had some experience with research supervision and 40.4% have never supervised.

Twenty-four items rated as moderately needed were in the scientific section and were more highly rated than items in the interpersonal section. The 10 remaining items rated 3–3.5 in the interpersonal section, were considered of some or little need. Items in the administrative and support section of the questionnaire were very highly rated whereas needs in the knowledge and interpersonal skills sections were perceived as moderate to high.

Analysis of the internal consistency of the survey yielded a Cronbach alpha of 0.98.
4. Discussion

The present study reports on the process and outcomes of developing an instrument to assess needs and readiness of research supervisors using a mixed methods approach.

Findings are discussed under headings related to the research questions as follows:

4.1. What are the perceived prerequisite needs of research supervisors?

Results of this study revealed that needs of research supervisors in our context are numerous and includes personal and contextual factors. Of the 52 survey participants, most (85%) were involved in both undergraduate and postgraduate education, had formal training in research (mostly via courses or workshops). Approximately a third had supervised students’ research projects and a quarter had no publications. As several authors have indicated research train...

These findings are in accordance with those of other investigators who indicate that supervisors and students are often concerned about time and priorities. It was noteworthy however that expert Delphi participant rated supervisor behaviors and interpersonal skills as more important than administrative support. A potential reason for this could be their assumption, particularly in the case of international external experts, that administrative support exists in all institutions and this may come from a background of positive experiences of support for development of expertise as researchers and research supervisors. Interpersonal skills, inadequate knowledge and giving dubious advice were factors leading to discontent in a recent study describing the experience of disagreements between Ph.D. students and supervisors. Supervisors and supervisees from UK and Sweden were also aware that relationships affected the process of Ph.D. education and that diversity in supervisee personalities demanded different approaches. Where there is substantial, unresolved misalignment between supervisors and students on needs and expectations both parties are likely to experience difficulties. Exploration of students’ perspectives regarding supervisory practices in this regard should lend an important dimension to our understanding and warrants future study.

Other authors have highlighted that there is more to research supervision than technical knowledge and that interpersonal skills are especially important. Coordinating with other mentors, setting clear relationship expectations and understanding impact as role model were among 26 skills identified in a US study of competencies of research mentors.

Such studies however, indicate that focus on roles alone may erroneously concentrate efforts on development of personal dyadic relationships and we would concur with these and other authors that development programs attempting to fix the technical aspects of the supervisor role within an administrative framework alone “...deny the genuine difficulties and complexities involved in supervision relationships”.

4.2. Can we safely infer research supervision readiness by interpreting supervisors perceived needs?

The literature indicates that ‘readiness’ has a substantial history in modern education theory and practice. For example, a first step in the process of teaching and learning is evaluating learner needs and readiness. Readiness also generally infers a necessary precondition for a person or an organization to succeed in facing a change or a challenge.
It is often assumed that research supervisors from the outset will be adept in all aspects of the task. The assumption is often that since they have achieved a certain level of proficiency in individual academic roles including completion of a research thesis progression into a supervisory role will be effective.

In this study we aimed to explore what prior cognitive, behavioral and environmental competencies and resources research supervisors perceived they did or did not possess in order to effectively function in their roles. We assumed that research supervisors perceived needs are related to both self-efficacy and readiness. However, as Bruner suggested, the idea of readiness is a "mischiefous half-truth ... largely because it ... provides opportunities for its nurture, one does not simply wait for it" (p. 29). Further, like Bruner, we reject the view that readiness for supervisory practice is something that resides only within the supervisor. Unless the conditions for learning and improvement are favorable, both will be frustrated. Readiness is thus, not an end in itself, it is the beginning of an active teaching and learning engagement.

When developing the pilot instrument, an implicit intent was to provide participants an opportunity to self-assess and learn something about themselves; not merely to check off the skills they felt they had acquired. We anticipated that participants would see supervision as a set of behaviors, attitudes and skills for which one may have varying degrees of confidence regarding readiness to undertake. Readiness is hence an ethical responsibility that both the institution and the individual have to their supervisees. We therefore believe that the pilot survey reveals something about the state of supervisor readiness which will be helpful to those developing and appointing research supervisors.

Many faculty developers and leaders fail to take the time to assess needs/readiness. They act without first determining the specific needs of those they are attempting to influence. For instance, they delegate tasks for which people are not ready, or they may continue to provide the basics for those who already know what to do.

The key to effective faculty development is matching offerings to the needs of participants. Although instinct and intuition can help in determining these needs, there is no substitute for doing preliminary evaluations of needs.

Assessing research supervisor readiness has a number of advantages. First, expectations of research students and the institutions they enroll with are growing; understanding readiness of supervisors clarifies the strengths and weaknesses. Second, it provides the information needed to develop others. This will include careful consideration of specific roles and responsibilities and the specific tasks needed to achieve them. Third, it helps define potential gaps in meeting expectations before they occur.

We nevertheless, acknowledge that a supplementary guide to readiness is observation of behavior. This may not be easily accessible in the traditionally private situations of research supervision but peer review and conversations about training, experience, current priorities, etc. with research supervisors promises valuable additional insight into readiness. Such conversations in communities of practice are vital for gaining mutual understanding of task-specific readiness. Using a quantitative readiness assessment framework as part of the process should put his on the agenda and make it an acceptable topic for discussion. Hence readiness assessment provides a useful baseline for helping others achieve their full potential.

This study is therefore, an important preliminary contribution to both instrument development, and provision of baseline data regarding needs of research supervisors within a Middle Eastern educational context.

4.3. Implications for research

Based on the results of this study, there appears to be several details that will be important for research supervisors and the organizations in which they function, to consider when preparing for this important activity. Important skills and characteristics identified include being enthusiastic for the role, having cognitive and interpersonal skills, being readily accessible to students and having organizational support mechanisms in place to assist supervisors.

Supervising students undertaking research projects at levels from pre-degree to doctorates is a significant part of the work of academics. Balancing multiple responsibilities within the role of research supervisor in addition to responsibilities teaching, administration and other activities of academics is challenging. To the best of the researcher's knowledge, only in recent years has there been an emerging literature addressing the specific requirements for supervision of both undergraduate and postgraduate students internationally. Furthermore, most literature and research initiatives relating to research supervision make reference to varying styles and are aimed at postgraduate level students.
focus on both pre-degree and postgraduate research supervision is called for.

The construction and utilization of self-report instruments is often considered a 'quantitative' endeavor. However, the process and outcomes described in this study highlights how using mixed methods can enhance the development and validation of research instruments. Social science knowledge must be based on valid measurements and the main goal of using mixed methods is usually to increase confidence in validity by minimizing the amount of error. The fact that the study instrument achieved high internal consistency as demonstrated by the Cronbach's alpha (0.98) may indicate the presence of some redundant items. Conducting a careful analysis of interrelated items is therefore called for in a future study. Adding qualitative approaches to instrument design and development should enable instrument developers to build stronger validity. Although the process is resource intensive, validation of a newly developed instrument is almost never accomplished through one study or one researcher; it requires numerous research efforts and should be considered an ongoing process. The sequential mixed method techniques used in this study is therefore recommended in whole or in part, depending on time and resources available to the researcher.

Final items of the developed questionnaire were in congruence with characteristics of good supervisors identified in protocols reviewed. This highlights the need for guidance as without protocols or guidelines supervisors might be confused about their roles and responsibilities. However, the author supports Cryer's advice that even when codes of practices exist, they need to be tailored to individual specific needs and day to day practice. Indeed, the pilot study findings indicate a general need for comprehensive faculty enhancement programs in this important area. The following section therefore outlines implications of the study for research supervisors' professional development.

4.4. Implications for research supervisors' professional development

Outcomes of the study clearly point to the need for the institution to provide opportunities for supervisors to acquire and expand upon their knowledge and skills. Such developments should target both novice and experienced supervisors seeking to enhance and share their skills and experiences. This should be in collaboration with all units concerned with research development. Of the studies reviewed, most recommend providing professional development for supervision with printed materials such as handbooks for students and supervisors, training sessions and mentoring programs were also among the most frequently utilized. In addition to advice, guidance books and websites there is a growing international literature that explores the supervisor–student relationship, effective practices and the perceptions of postgraduate supervisors. Indeed, in recent years there have been more efforts internationally to understand more about supervision at the postgraduate level (e.g. doctorate completion). However, the research literature relating to experiences, perceptions and practices at undergraduate level is less well developed and there remains relatively little advice available for supervisors of research at this level.

Future research is needed which combines quantitative and qualitative methods, explores supervisors' actual experience with research supervision and determines students' perspectives of characteristics of good research supervision.

4.5. Limitations

This study has several limitations including use of cross-sectional data with a small sample; without further construct validation of the instrument utilizing a larger sample it would not be appropriate to generalize the findings broadly. Further, the instrument involved self-assessment which is difficult and therefore subject to bias. These and other authors have suggested that self-assessment of competencies; knowledge and skills should be supplemented with researcher/expert observation. Despite these limitations the instrument can help medical educators to move forward in their efforts to enhance the quality of research supervision. Additional work is however needed to confirm the applicability and utility of the instrument in samples in other higher education contexts, from different disciplines and cultural contexts. In Western universities, where there are increasing numbers of international students, an added dimension to the supervisory role is dealing with diversity. It may be easy to unwittingly make assumptions about supervision roles applicable to all students. A further question might therefore be what are the needs of research supervisors in responding to the challenges of supervising international students.

5. Conclusions

The current study has described the process of developing a useful instrument to determine the research supervision needs and requirements of faculty.
The study has important implications for instrument development and research supervisors' professional development. A comprehensive approach to development of a needs assessment tool is crucial as this helps develop a clearer understanding of needs and guides the content of relevant future supervisor development activities. Research supervision is however, multifaceted. The outcomes of the pilot study indicate that the identified cognitive and behavioral needs may represent a lack of readiness or a limitation in the effectiveness of faculty in fulfilling their current roles as research supervisors and therefore the university should aim to foster development mainly in these areas whilst providing appropriate administrative support and protected time for research supervision. In its current state the instrument could be used as a preliminary diagnostic tool to assess the needs of research supervisors for individual assessments and faculty development interventions. However, an important next step will be to conduct exploratory and confirmatory factor analysis on item inter-correlations to further determine the construct validity of the questionnaire.

6. Competing interests

The authors declare that they have no competing interests.

7. Authors' contributions

AM wrote the research proposal, conducted interviews, analyzed data and contributed to the draft of manuscript, ME contributed to writing the proposal, coding of data and analysis of results and contributed to writing the final manuscript. CR reviewed results, edited and contributed to writing the manuscript. MM contributed to the study design, recruiting participants and helped in manuscript draft and submission.

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