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Title

A WORLDWIDE INVESTIGATION OF CRITICAL CARE RESEARCH COORDINATORS' SELF-REPORTED ROLE AND PROFESSIONAL DEVELOPMENT PRIORITIES: THE WINNER SURVEY

Short title

Research Coordinators in Critical Care: The WINNER survey

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ABSTRACT

Aim and objectives. To describe the self-reported role and professional development priorities of Research Coordinators in different regions of the world.

Background. Research Coordinators employed in critical care settings provide clinical and technical expertise in the development, conduct and completion of clinical research studies. Knowledge of this specialised role is well established in some parts of the world, yet emerging in others.

Design. Descriptive exploratory study involving research coordinators outside of Australia and New Zealand.

Method. An anonymous, structured, multiple-choice, web-based questionnaire conducted between April and May 2011.

Results. There were 80 respondents from North America (61%), Europe (29%) and Latin America (10%). The majority of respondents performed data collection and obtained informed consent, and half had presented study findings at conferences or wrote scholarly articles, despite a greater willingness to do so. Requisite skills for the Research Coordinator role included clinical research knowledge, creative problem solving and the ability to identify/resolve ethical questions. 'Best' reported aspects of the role were promotion of evidence-based clinical practice, intellectual stimulation and autonomy. 'Worst' aspects included heavy workload, lack of funding and recognition.

Conclusion: Research Coordinators working in critical care settings collect data, require clinical research knowledge and problem solving skills, and are interested in, but have less confidence in, dissemination of research findings. They feel isolated with a lack of support and inadequate remuneration for the effort and time required to maintain the high standards of their role. This is outweighed by the satisfaction derived from promoting the research

process and autonomy. Further observational studies aimed at clarifying and advancing the role of the Research Coordinator is warranted.

Relevance to clinical practice. This paper offers insight into the global roles and responsibilities as reported RCs employed in critical care settings.

Keywords. international survey, critical care, research coordinator, requisite skills

INTRODUCTION

Scientific research studies performed in the critical care setting are vital for evaluating clinical practice and for establishing best evidence to guide patient care. By providing clinical and technical expertise Research Coordinators (RC) employed in critical care research play a vital role in the development, conduct and completion of clinical research studies (Davis et al, 2002; Rickard et al 2007; Hill & MacArthur, 2006). The specialised role of the RC is well established in some parts of the world, yet emerging in other (Mueller, 2001; Yanagawa et al 2008).

In Australia and New Zealand, the RC role in the critical care setting has been in place for more than 15 years. Skills and tasks performed by these RCs include: study project review and site implementation; data collection and administrative support; patient and staff education; and liaison between researcher and ethical review bodies (Roberts et al, 2011). Indeed, the growth in numbers of RCs across Australia and New Zealand has mirrored the increase in the regulatory, ethical and protocol requirements of conducting clinical research, and the need to build research capacity within the Australian and New Zealand critical care community. Making a difference to patient care and autonomy has been

highlighted as benefits of the RC role (Roberts & Rickard 2004; Roberts et al 2011). However, investigations both within the critical care and non-critical care hospital settings have identified that RC typically learn their research skills and understanding of the research process on the job (Roberts et al, 2011a; Roberts et al, 2011b; Anderson 2008; Chester et al 2007; Rico-Villademoros et al, 2004). In addition, despite the prescriptive nature of research (research protocols and specimen handling procedures) and rigid regulatory requirements, as outlined in the International Conference on Harmonization guidance: Good Clinical Practice (ICHGCP), the critical care RC position remains insecure due to a lack of on-going funding and a lack of adequate training for career development (Roberts et al, in press; Hill & MacArthur 2006).

There have been two comprehensive studies undertaken into the RC cohort in Australia and New Zealand during the past decade (Roberts et al, 2011a: Rickard et al, 2006). The shared aim of both studies was to map the professional development priorities and 'best' and 'worst' aspects of the critical care RC role. Both studies were conducted using a web-based, on-line questionnaire method to engage with RCs and obtain their responses. Although the studies were separated by five years, the 'best' aspects of the role remained autonomy and the intellectual stimulation, with the 'worst' aspects being inadequate peer support and working hours. Respondents to these surveys also identified little improvement in the employment conditions of the RCs despite an increase in the number and type of clinical trials being conducted. While these studies help to describe the RC role for the Australian and New Zealand context, little is known of the RC role in other regions of the world. In response to this, the aims of this study were to describe the RC role internationally, highlight the professional development priorities of RCs in different regions of the world and compare these data to previous work in the Australian and New Zealand context. By establishing the nature of current practice by this specialized group of nurses,

the study sought to explore the capacity for increasing future international collaborative research in critical care and critical care nursing.

For the purpose of this study the term 'Research Coordinator' was used to encompass all nurses or allied health staff who identified themselves as being employed in a research role within a critical care setting of a hospital. Thus, all respondents would be considered research coordinators whose role and responsibilities are conduct in part or in whole in the setting of critical care. Tasks or role responsibilities commonly performed by RCs may include some or all of the following: strategic planning and ICU clinical trial development; the planning and coordination of clinical trial (including trial registration, monitoring, ethical or institutional review processes); management of clinical trial personnel and resources (including participant screening and obtaining informed consent); facilitation of accurate and timely completion and submission of clinical trial data; and, upholding the principles of the Declaration of Helsinki in accordance with the ICHGCP and that of local state/national privacy/ethical legislation and guidelines.

METHODS

Target population, recruitment and administration of the questionnaire

The target population for the survey consisted of RCs working in a research capacity in critical care settings outside of Australia and New Zealand. As no current database listing all such RCs exists, it was not possible to contact all potential participants directly, or to know how many such positions there currently are. We attempted to contact RCs using 'snow-ball' recruitment by email correspondence and distribution to the Regional Coordinators of critical care nursing organisations affiliated with the World Federation of Critical Care Nursing (available at http://en.wfccn.org). An introductory email was sent to 34 Regional Coordinators in Africa, Asia, Europe, Latin America, North America and

Oceania (excluding Australia and New Zealand). These Regional Coordinators were asked to distribute the survey to their members. The email invitation to potential respondents provided information on the aim, background, rationale, and voluntary nature and privacy methods associated with the study. Additionally, Regional Coordinators had the option to translate, print and distribute copies of the survey for completion in their region if needed. Translation of the survey invitation and survey was performed (English into Spanish) to aid survey completion for Latin American respondents.

The questionnaire was a web-based, on-line survey via email distribution using an online survey service (http://www.surveymonkey.com). Responses were accepted via the study website during a six-week period from April to May, 2011. A single reminder email was sent four weeks into the survey period to Regional Coordinators as a means to bolster the number of respondents. Postal responses were also accepted and the data entered manually into the survey database.

Questionnaire development and structure

An anonymous, structured, multiple-choice questionnaire was used to survey RC employed in critical care settings. The questionnaire contained four parts with 27 questions, including a total of 62 sub-headings, which sought to elicit: employment characteristics; professional development needs of RCs working in critical care settings; and self-perceptions of the 'best' and 'worst' aspects of their role (Roberts et al, 2011a; Roberts et al, 2011b). The first part (20 questions) ascertained demographic, employment status and work characteristics, of which the questions were derived from earlier questionnaires used to explore Australian and New Zealand critical care RCs. The second part had two questions, with the first question listing 29 tasks potentially performed as a RC, with participants answering yes/no/uncertain (i.e. data collection, specimen sampling and ethics submission).

The second question had 12 skills which the respondents ranked from one to 10 (one being 'least important' and 10 'most important') according to importance for functioning in the RC role (i.e. patient assessment skills, teaching skills and clinical research knowledge). The third part contained three questions and used a similar scale of one to ten. Here, the respondents were asked to rate their satisfaction with 13 predefined items in relation to their research role, such as intellectual stimulation, autonomy, work load and support from colleagues. Furthermore, the participants were asked to score the importance of, and their confidence in, performing four professional research development related tasks, using a five-point scale (one being 'least importance/confidence' and five ' most confidence/importance'). The final part of the questionnaire had two questions. The final two questions asked respondents to identify in free text what they considered to be the 'best' and 'worst' aspects of their role respectively.

Data management and analysis

All responses were expressed as a number and percentage of the total number of responses for that question. No imputation was undertaken as the proportion of missing values was low: all multi-choice questions had six or less ($\leq 7.5\%$) missing responses. Descriptive statistical analysis was performed using Statistical Package for the Social Scientists (SPSS, version 17, Chicago, U.S.A) to provide descriptive and proportion of affirmative responses to individual questions. Content analysis was used by the researchers to objectively and systematically quantify the keywords and themes recorded in the free text data provided by the respondents in response to the 'best' and 'worst' aspects of their role (Bryman 2008; Neuendorf 2002). Grouping of keyword/phrases into thematic clusters was then performed. Analysis was undertaken by two of the researchers (GME, BR). Agreement between researchers regarding the thematic clusters and categories extracted was 100%.

Ethics approval

Prospective approval was obtained from the Institutional Human Research Ethics Committee at Griffith University, Queensland, Australia or the survey to be conducted. The study was deemed low-risk and completion of the survey implied consent. No personal details or internet protocol (IP) addresses were collected, thereby providing further anonymity for each respondent.

RESULTS

Characteristics of cohort

A total of 80 respondents from three geographically different locations completed the survey: North America (n=49; 61%); European (n=23; 29%) and Latin America (n=8; 10%). Overall, 74 (93%) respondents were female, 33 (41%) respondents were aged between 41 – 50 years, and 37 (48%) respondents had more than six years' critical care research experience. Sixty-four (81%) respondents reported having nursing as their base discipline. The demographic characteristics of respondents are shown in Table 1.

[INSERT TABLE 1]

In terms of employment, the largest number of respondents (n=44; 56%) worked on a full-time basis and 43 (57%) reported working in metropolitan public hospitals. Fifty-six (72%) reported their place of employment was an adult medical/surgical critical care unit. For the previous 12-months, 78% (61/78) of the respondents reported being involved in one to 10 clinical studies (clinical trials, studies, surveys and audits), with a further 21% (16/78) reporting participation in 11-25 clinical studies. One respondent identified being involved in >50 clinical studies. A description of the employment characteristics of all respondents is shown in Table 2.

[INSERT TABLE 2]

Reported role activities and attributes of RCs

Respondents were asked to indicate how commonly they performed 29 predefined tasks. Most respondents (≥ 90%) identified performing data collection and obtaining consent as regular activities, while more than 75% performed patient assessment; screened potential trial participants; attended to regulatory and ethical submission; taught protocols and study specific procedures to clinical staff, as well as completed data entry. Fewer respondents (< 50%) identified being involved in writing articles for publication, performing statistical analysis or complete laboratory research. A full description of the reported tasks carried out by the RCs is shown in Table 3.

[INSERT TABLE 3]

The top four self-reported skills necessary to satisfactorily perform as a RC by over 90% of respondents were: 1. possession of clinical research knowledge; 2. creative problem solving skills; 3. ability to identify ethical questions or concerns; and 4. objectivity (the ability to be neutral/avoid professional bias). Public speaking and technical/hands-on skills were less frequently reported by the respondents. The descriptive of the 12 skills deemed necessary to function in the role as a critical care RC is shown in Table 4.

[INSERT TABLE 4]

Professional development priorities of RCs

Many (70%, 55/79) respondents reported support from their employer to study for research specific qualifications. Fewer respondents (51%, 40/78) received employer-provided, on-site training in research ethics or management. Table 5 presents the interest and confidence of respondents in relation: to dissemination of research findings (local, national and international); authorship of a research related article; and developing research protocol

from the beginning. The affirmative responses in Table 5 represent scores of ≥six out of 10 and, in all instances, respondents expressed a higher 'interest' than 'confidence' in their ability to disseminate research, with the largest proportion of respondents (59-79%) answering all related questions. Respondents had the most interest in developing a research protocol and the least confidence in presenting research findings at an international conference. Developing a research protocol also gained the biggest discrepancy between interest and confidence with 13 percentage points.

[INSERT TABLE 5]

Perceptions of the 'best' and 'worst' aspects of the RC role

Respondents' answers to the 'best' and 'worst' aspects of their research role were analysed and grouped into three thematic clusters for both categories. These were: (1) work conditions; (2) work environment; and (3) work role. For the 'best' aspects of the critical care research role, a total of 61 respondents (76%) provided 97 statements. The thematic category with the most number of statements was work role (59), followed by work conditions (20) and then work environment (18). A précis of the 'best' aspects of the critical care RC role described the delivery of 'best clinical practice', with opportunities for 'professional development' in a 'autonomous' position, located in a specialised and valuable area (critical care).

In contrast, a total of 63 (79%) respondents provided 94 statements in relation to the 'worst' aspects of the critical care research role. The thematic category with the most number of statements was 'work condition' (50), followed by 'work environment' (37) and work role (7). Respondents described workload issues, lack of support, feelings of isolation, and lack of funding as being the 'worst' aspects of their role. Perceptions of the 'best/worst' aspects as reported by the respondents are shown in Table 6.

[INSERT TABLE 6]

Regional variations in the RC role

There were four main variations in the responses between respondents from different regions. The variations in responses were in regards to location of practice, workload and on-the job training. First, 67% (32/48) of respondents from North America were employed on a full-time basis compared with 48% (11/23) of European respondents and 17% (1/6) Latin American respondents. Second, 63% (5/8) of Latin American respondents indicated greater than 10 years experience in critical care research compared with 22% of North American respondents and 17% of European respondents as having greater than 10 years of critical care research experience. Third, there was a difference in the percentage of respondents who reported currently studying for a university qualification: 61% (14/23) of European respondents, 50% (4/8) of Latin American respondents and 12% (6/49) of North American respondents. Finally, there was variation in the responses in regards to the respondents indicating 'yes' to their research employer providing specific on-site training in ethics and / or the management of ethical issues: 75% (6/8) of Latin American respondents indicated 'yes' to having specific training compared to 63% (30/48) of North American respondents and 18% (4/22) of European respondents.

DISCUSSION

This study sought to offer insight into the global roles and responsibilities of RCs employed in critical care settings. It has demonstrated some similarities as well as regional differences in the role and professional development priorities of RC respondents from North America, Latin America and European countries. Key differences between the regions from the findings of this study were employment, where proportionally fewer Latin

American respondents were employed on a full-time basis compared with European or North American respondents. Latin Americans had longer experience in critical care research than North American respondents in particular, and over half the European respondents were currently pursuing further university qualifications. These results may reflect the variation in work roles, employment and, possibly, economic variations.

Most respondents were involved in up to ten clinical projects during the past year. These included pharmaceutical sponsored research, regional research, departmental, and own research. The distribution between the types of research differed from a previous survey in Australia and New Zealand (Rickard et al, 2006), where the majority undertook medically initiated trials (pharmaceutical 90% vs. 56% in current survey) and regional research (84% vs. 63%), but comparatively fewer undertook nursing research (36% in the current survey vs. 59% in Australia and New Zealand). This may reflect the difference in demography between the two cohorts, suggesting the current survey has captured academic nursing researchers rather than those employed predominantly to undertake commercial research.

The most common tasks the RCs were undertaking included collecting data, obtaining consent and assessing patients, which compares well with results from the literature and come as no surprise considering these tasks, are the cornerstones of research and ranked as necessary skills for being a RC in the critical care environment. Sadler et al (1999) describe the variety of skills required to work effectively as a RC, which includes participant recruitment, protocol implementation, advocacy for the safety of research participants, outcome evaluation and skills of data collection. Such expertise is necessary to facilitate efficient trial conduct and completion.

The number of affirmative responses regarding both tasks in this survey, such as teaching study specific procedures to clinical staff and attending to regulatory requirements and ethical matters, and necessary skills such as clinical research knowledge and patient advocacy, certainly implies that researchers the world over endeavour to adhere to sound ethical principles. The RC role especially varied when considering over half the respondents performed duties from teaching, clinical patient assessments, budget preparation and handling biological specimens. It may be this constant stimulation that accounts for nearly half the respondents having worked in clinical research for more than six years.

For all respondents, there appeared to be a difference between the desire to, and the confidence in, developing a research protocol and subsequently presenting and publishing the results. A possible reason for this could be varying access to resource material (scientific information or academic support) or it could be linked to less accessible opportunities for learning research skills, as many respondents identified they were not receiving any formal on-site training. These findings were almost identical to those in a survey of Australia and New Zealand RCs, where the interest exceeded the confidence in similar aspects of research dissemination (Roberts et al, 2011b). Future efforts to identify research priorities or undertake multi-disciplinary research projects could facilitate research development opportunities and skills for RCs internationally. However, some inconsistency became apparent in the current survey as a significant number of respondents participated in protocol development, presented study results and wrote scholarly articles when asked about the tasks they performed, but at the same time appeared to lack confidence in completing these tasks. This may suggest a lack of support, training and resources to fulfil these areas of research as indicated by the number of grievances regarding the work environment in the “worst” free text. Differences in the hospital

administrative structures or unit based support to facilitate the RC position may provide a possible explanation for this finding, but future in-depth investigations would be necessary to identify the salient aspects at play.

Using free text to describe the 'best' and 'worst' aspects of the RC role, there was an almost equal number of statements for the two categories. The theme identified as 'work role' by the authors attracted more than half the 'best' statements and hardly any negative comments. However, the theme 'work condition' attracted over half of the negative comments but only about a quarter of positive statements. Finally, the theme 'work environment' attracted just over twice as many negative as positive statements. This is somewhat different from the Australian and New Zealand experience where 'work condition' topped the list of 'best' aspects, and 'work environment' received most negative comments (Roberts et al, 2011b). This may indicate that RCs in the current study already hold independent and autonomous positions within their healthcare institution and the development, promotion and translation of research findings is the "driver" of their enthusiasm. Similarly, Chester et al (2007) hypothesized that the expertise of methodology and regulations governing clinical research steered towards an academic career where the RC takes a lead role in the project. Where autonomy and variability remains a positive drawcard for entering a research career, those domains did not attract so many comments, which is in contrast to the conclusion by Fowler and Stack (2007) who identified the concepts of 'autonomy', 'diversity of tasks' and 'flexibility of involvement' in association with the role of RCs in areas other than critically care. Nevertheless, these terms still apply to the critical care RC role and may reflect RCs who have stepped into the research role directly from the clinical area rather than management or academia.

There was a shortfall of funding which was also identified by Chester et al (2007), with the researchers relying on grants and income derived from the pharmaceutical industry rather than permanent sources from the healthcare division. Such lack of funding may, in turn, affect work hours and load as the employer will not be in a position to employ more staff to complete the research projects in a timely manner, and the RC will often be working on his/her own, thus leading to a sense of isolation. Hill and MacArthur (2006) stated similarly that 58% of respondents in their survey had raised concerns of isolation. In response, in order to build research capacity and make the RC role sustainable further exploration of funding models (i.e. joint partnership with the hospital and pharmaceutical industry) is warranted.

Continued education is a vital component of maintaining clinical research skills to meet the increasing complexity of ethical and regulatory requirements faced by RCs. The respondents felt a distinct lack of support, resources and training opportunities, which is likely to be linked to the lack of funding and would intensify the feelings of isolation. Roberts et al (2011) proposed that clinical management of patients has become increasingly complex and elaborate and, therefore, the addition of a research protocol to the care plan may introduce some hostility towards the RC from the bedside clinician who would see this as an added stressor. The first step in the processes of improving bedside clinicians understanding of research protocols would be to identify clinicians' current understanding and expectations of trial requirements. This information would assist RCs to identify knowledge deficits and target specific areas for education. The second step in the process, after the identification of knowledge deficits, is to tailor trial information to ensure clinical applicability. Clearly formulated interventions that then use explicit methods to convey relevant research related information will then optimise safe trial conduct and protocol adherence and possible reduce stress (Eastwood, et al., 2008).

Whilst this study has strength in being the first research project, to date, that has aimed to study RCs internationally, and provides the first analysis of this cohort that will provide a platform for future studies, it is limited by a number of issues. Firstly, despite broad distribution of the survey (web-based, key local regional coordinator support and a reminder email) the response rate was lower than expected, exposing results to a non-responder bias (Jones et al 2006; Reade et al 2010). Secondly, responses were self-reported data and, as such, may not reflect actual practice or the practice of non-responders. Thirdly, no respondent identified themselves as having come from Africa, Asia, or Oceania, thus, there is a potential that the results are likely not reflective of RCs in these areas, or that there may be limited RCs presence or representative in these geographical locations. Fourthly, the survey was tailored toward those who either had English as a primary language or were confident in their own ability to read and understand English; thereby potential responders did not complete the survey. Lastly, there was the possibility that nurses not working in critical care or whose role was not primarily research based may have received the email invitation to complete the survey due to the snowball recruitment method used.

Conclusion

Our findings demonstrate that the role of the RC in three different geographical regions share similarities but also differ in the self-reported role, job satisfaction and professional development priorities of the respondents. The respondents felt inadequately remunerated for the effort and excessive time required to maintain the high standards of their role and had a sense of dissatisfaction with the lack of peer support and recognition. This was outweighed by the satisfaction derived from promoting the research process and autonomy. Establishing a current profile of existing RC practice, using other networks or critical care

research groups to clarify the true status of the RC role in other regions, is a necessary prelude to justify future prospective studies aimed at improving the job satisfaction, professional development and a sustainable career path of this role.

Relevance to clinical practice

This study offers insight into the global roles and responsibilities as reported RCs employed in critical care settings. Finding demonstrated some similarities as well as regional differences in the role and professional development priorities of RC respondents from North America, Latin America and European countries. Continuing to explore the professional development and role of the critical care research coordinator will help to establish and sustain this important role.

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TABLES

Table 1

Respondent demographic characteristics

Characteristic	**n**	**%[1]**
Gender (n=80)		
Male	6	8
Female	74	93
Age (years)(n=80)		
21 – 30	8	10
31 – 40	21	26
41 – 50	33	41
>50	18	23
Location (n=80)		
North America*	49	61
Europe**	23	29
Latin America[†]	8	10
Base discipline (n=79)		
Nursing	64	81
Medical Sciences	8	10
Arts/Humanities	7	9
Overall clinical research experience (years)(n=77)		
< 1	17	22
1 – 3	8	10
4 – 6	15	19
7 – 10	19	25
>10	18	23
Critical care research experience (years)(n=80)		
< 1	7	9
1 – 3	14	19
4 – 6	20	25
7 – 10	19	24
>10	20	25
Non-critical care research experience (years)(n=78)		
0	17	22
1 – 3	8	10
4 – 6	15	19
7 – 10	20	26
>10	18	23

[1] Due to rounding, percentages may not always add up to 100. *North America, includes Bermuda, Canada, and the United States of America. **Europe, includes Central, Eastern, Northern, Southern, Western European countries. [†]Latin America, including Central and South American countries.

Table 2

Respondent employment characteristics

Characteristic	**n**	**%**
Employment facility (n=76)		
Metropolitan public hospital (university)	43	57
Metropolitan public hospital (non-university)	4	5
Metropolitan private hospital (non-university)	5	7
University hospital	20	26
Rural based	4	5
Critical care unit (n=78)		
Adult medical/surgical (mixed)	56	72
Paediatric	12	15
Cardiac/cardiac medical	5	6
Neurological	2	3
Other	3	4
Employment status (n=79)		
Full-time	44	56
Part-time (1 – 2 days/week)	14	18
Part-time (3 – 4 days/week)	9	11
Casual	12	15
Number of clinical research projects in past 12 months (n=78)		
1 – 5	36	46
6 – 10	25	32
11 – 15	9	12
16 – 20	5	6
>21	3	4
Type of clinical research projects conducted (n=78)[2]		
Pharmaceutical research (sponsored)	44	56
Regional research (involving several units)	49	63
Departmental medical research (unit based)	49	63
Departmental nursing research (unit based)	28	36
Own research	27	35
Audits/data registries	25	32
Other	8	10

[1] Due to rounding, percentages may not always add up to 100. [2] Respondents could select more than one response option.

Table 3

Roles and tasks performed by Critical Care Research Coordinators

Item	**Affirmative responses n (%)**
Data collection (n=77)	71 (92%)
Obtaining consent (n=77)	69 (90%)
Patient assessment (study protocol specific) (n=77)	64 (83%)
Patient screening for study eligibility (n=77)	65 (84%)
Data entry (n=77)	64 (83%)
Teaching of protocol and study specific procedures to clinical staff (n=77)	64 (83%)
Ethics submissions (n=77)	63 (82%)
Teaching of research topics to clinical staff (n=77)	61 (79%)
Attend to regulatory requirements and ethical matters (n=77)	61 (79%)
Designing data collection tools (n=77)	56 (73%)
Data transcription (n=77)	56 (73%)
Provide patient/relative with study education and support (n=77)	52 (68%)
Reviewing protocols for site feasibility (n=77)	50 (66%)
Collect and process biological specimens for local processing (n=77)	46 (60%)
Prepare study budgets (n=77)	45 (58%)
Protocol development (n=77)	46 (60%)
Make decisions on behalf of Principal Investigator (n=77)	43 (56%)
Collection and process of biological specimens for national/international shipping (n=77)	41 (53%)
Literature searches (n=76)	42 (55%)
Present study results at conferences/congresses (n=77)	41 (53%)
Database design (n=77)	41 (53%)
Grant submissions (n=77)	39 (51%)
Manage study budgets (n=77)	38 (49%)
Active participant in unit/hospital research committees/boards (n=77)	37 (48%)
Write articles for publication (n=77)	36 (47%)
Collate research results (n=77)	32 (42%)
Perform statistical analysis of study data (n=77)	31 (40%)
Negotiation with pharmaceutical industry representatives (n=77)	28 (36%)
Perform laboratory research (n=77)	13 (17%)

Table 4

Skills necessary to function in the role of Critical Care Research Coordinator

Item	**Affirmative responses n (%)**
Clinical research knowledge (n=79)	77 (97%)
Creative problem solving (n=79)	77 (97%)
Ability to identify ethical questions, concerns or situations (n=79)	74 (94%)
Objectivity (ability to be neutral/avoid professional bias) (n=78)	73 (94%)
Organisational / planning and managerial skills (n=79)	73 (92%)
Communication skills (with patients, colleagues, public) (n=79)	73 (92%)
Teaching skills (n=79)	72 (91%)
Ability to identify safety concerns, problems or situations (n=79)	72 (91%)
Patient advocacy skills (n=78)	69 (88%)
Assessment of critically ill patients (n=77)	68 (88%)
Public speaking skills (n=78)	67 (86%)
Technical / hands on skills (n=79)	61 (77%)

Table 5

Respondents' interest and confidence in the dissemination of research findings

Item	Affirmative response n (%)	Difference
Interested: Ability to present research findings at local or national conferences (n=79)	58 (73%)	6 (7%-points)
Confidence: Ability to present research findings at local or national conferences (n=79)	52 (66%)	
Interested: Ability to present research findings at international conferences (n=79)	53 (67%)	6 (8%-points)
Confidence: Ability to present research findings at international conferences(n=79)	47 (59%)	
Interested: Being author on published articles report research results (n=79)	58 (73%)	7 (8%-points)
Confidence: Being author on published articles report research results (n=78)	51 (65%)	
Interested: Developing research protocol from the beginning (n=78)	62 (79%)	10 (12%-points)
Confidence: Developing research protocol from the beginning (n=78)	52 (67%)	

Table 6

'Best' and 'worst' aspects of the Critical Care Research Coordinator Role

Thematic clusters	**Categories**	
	Best aspects (61 respondents/97 statements)	**Worst aspects (63 respondents/94 statements)**
Work role	Total (n=59)	Total (n=7)
	Promoting best clinical practice	Obtaining informed consent
	Intellectual stimulation	Data entry
	Promoting research	
Work conditions	Total (n=20)	Total (n=50)
	Autonomy	Workload
	Flexibility	Work hours
	Challenges	Isolation
	Variability	Lack of funding
Work environment	Total (n=18)	Total (n=37)
	Critical Care team	Lack of support / recognition / acknowledgement
	Critical Care environment	Lack of training opportunities
	Patient care & contact	Lack of resources