

Descriptive survey of the contextual support for nursing research in 15 countries

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Background: Global research productivity depends on the presence of contextual factors, such as a doctorally prepared faculty, graduate programmes, publication options, that enable the conduct and publication of studies to generate knowledge to inform nursing practice.

Objectives: The current study aimed to develop and test an instrument that measures the level of contextual support for nursing research within a specific country, allowing comparisons between countries.

Method: After development of a 20-item survey with seven factors and 11 criteria based on a literature review, a quantitative descriptive e-mail survey design was used.

Results: Nurse researchers ($N = 100$) from 22 countries were invited to participate. The response rate was 39% from 15 countries. Ethics approval was obtained by investigators in their country of origin. Results showed wide variation in the level of contextual support. The average total level of support across all countries was 26.8% (standard deviation [SD] = 14.97). The greatest variability was in the area of availability of publishing opportunities (ranging between no suitable journals in a country to over 100). The least variability was in the area of availability of local enabling support ($SD = 7.22$). This research showed wide differences in the level of contextual support for nursing research.

Conclusion: The survey instrument can be utilised as a country assessment that can be used to strategically plan the building of infrastructure needed to support nursing research. Contextual support for nursing research is an antecedent of strong science. Building infrastructure for nursing science is a priority for global health.

Introduction

There is a pressing need for nursing science globally to inform interventions that improve healthcare processes, thereby resulting in better patient outcomes. The dramatic changes in healthcare and in the roles and boundaries of nursing professionals require new, innovative solutions generated by nursing science. Globalisation, which has led to health and well-being becoming global issues, has forced the development of new trends in healthcare education, practice and research internationally (Harrowing *et al.* 2010). Nursing professionals should be able to generate and develop new knowledge to establish the scope of healthcare practice and to verify the knowledge essential to respond to clinical realities in healthcare delivery (Downs 1988). Based on her research regarding the developments of nursing knowledge after World War II, Fairman (2008) concluded that the increased number of talented and creative nursing staff and innovative scholars holds great promise for patients. However, the international impact of nursing research has not gained the recognition it deserves (Fairman 2008).

Although nursing research has become more prevalent, flexible and collaborative over the last few decades, it continues to remain largely dependent on financial support and funding priorities shaped by national politics and dominant cultural and social contexts (Fairman 2008; Rosenberg 2007).

Problem statement

Nursing science is fundamental to effective nursing practice and is built on nursing research. There is a wide variance in the level of both the generation and application of knowledge globally. This variance is detrimental to evidence based practice, results in variances in the quality of healthcare, and negatively affects patient outcomes. It is therefore important internationally for nursing research to develop to equitable levels in order to strengthen nursing science and practice.

Furthermore, the contextual factors that influence nursing research productivity are not generally acknowledged, but should be identified and described in order to address each barrier

systematically and strategically. To promote nursing research, contextual factors that influence research productivity must be at an appropriate level.

Purpose, objectives and research questions

The purpose of this research was to develop an instrument to measure the level of contextual support for nursing research within a specific country, allowing comparisons between countries, and to test this instrument through a survey in selected countries.

The objectives of this research and resulting research questions were the following:

Phase 1: Develop an instrument to describe contextual support for nursing research.

Research question: How can contextual support for nursing research be measured in a country?

Phase 2: Test the instrument by describing the level of local and national contextual support for nursing research in selected countries.

Research question: What is the contextual support for nursing research in the selected countries?

Contextual support refers to all factors external to the individual researcher which either impede or promote research productivity. These factors can be classified as local (inherent in the workplace or organisation of the individual researcher) or national (part of the specific country's national research support structure).

Significance

Understanding how to measure the level of essential contextual support for nursing research in a country can make a significant contribution to raising awareness of this issue. Nursing groups can use the results to lobby for increased support where such support is lacking. This could contribute to the advancement of nursing scholarship both nationally and internationally.

Literature review

Globally, nursing and healthcare institutions are influenced by international initiatives such as those led by the World Health Organization (WHO). In the Alma Ata Declaration of 1978, the WHO established the acceptable level of health promotion for all the people of the world by the year 2000. This is updated every 10 years to reflect a new vision for society. To meet this declaration, the International Council of Nurses (ICN) continues to work with national nurses' associations worldwide to promote and facilitate the development of research in nursing by nurses themselves, as well as the dissemination of the research findings that are generated as a result (Freshwater 2003).

Globally, nurses are called upon to produce evidence based practice guidelines, as well as developing and implementing clinical and research policies and standards. In the academic setting, nursing programmes are required to incorporate

new and culturally sensitive interventions to improve health. Thus, nurses in practice and in academic settings are forced to focus their attention on the importance of establishing research-based practice (Freshwater & Broughton 2001; Freshwater & Rolfe 2001). This practice continues to be challenging to researchers both locally and internationally because the infrastructure to support well-constructed and well-conducted research is inadequate (Freshwater 2003). Contextual and contingent factors continue to shape nursing scholarship, as has been the case in the past, within ever changing social and cultural contexts (Fairman 2008).

The critical challenge is how the different contexts are acknowledged and understood. Nursing knowledge gained through scholarship should help nurses understand and develop strategies for patient care. In earlier decades, nursing knowledge was developed by individual expert practitioners equipped with a solid theoretical preparation, but the social, political, economic, cultural and scientific foundations have changed so that the development of nursing knowledge is now more systematic and academic (Fairman 2008; Rosenberg 2007). Fairman (2008) describes how the development of graduate programmes and nurse scholars influenced the development of nursing knowledge in the USA after World War II. The contextual and innovative forces influencing nurses, scholars and practitioners enhance the generation of important ways of defining what nurses do, as well as the boundaries of their practice. These forces may help generate a common language by which to describe how nurses contribute to quality patient outcomes (D'Antonio & Fairman 2004). Philosophically, moving nursing science forward is a shared global vision. The reality, however, is that there is a wide variance in the support for nursing science amongst countries, with a subsequent variance in the knowledge that is generated and which relates specifically to each country's population.

Scientific productivity measures for individual researchers are not adjusted for geography, primary language of origin or other factors which may enable or inhibit scholarship. This is an important distinction, since some settings (or countries) set the expectation and provide resources for successful scholarship. Laudel (2005) compared scientists in experimental physics from Germany and Australia to see how valid external grant funding was as a measure of the quality of the research undertaken. He isolated 'influencing conditions' which determined the ability of a scientist to advance by obtaining external funding for research. He also identified cognition, social and institutional conditions as contextual factors determining 'the opportunities for a researcher to actually acquire external funding' (Laudel 2005:30). These contextual factors were different for the two countries and included:

- appropriate funding sources
- availability of enabling funds
- acceptability of funding proposals (mainstream, low-risk and disciplinary)
- availability of time.

These variables indicated that scientists from different countries might face different barriers in conducting research.

A survey was conducted amongst 16 different types of Chinese hospitals to investigate their current status and the need for nursing research. The results revealed that the nursing staff indicated a desire to conduct research but were unable to do so because they faced several difficulties. One barrier expressed was the lack of research funding support (Wang & Huang 2005). Li, Cheng and Liu (2002) analysed all the research articles published in five Chinese nursing journals from 1999 to 2001. Surprisingly, only 2.2% of research projects received funding support. However, funding is not the only barrier to overcome.

Contextual factors related to increased emergency medicine research productivity include appointing more non-clinical faculty members, reducing clinical hours for researchers and making research co-ordinators available (Karras *et al.* 2006). Itagaki (2005) found that National Institute of Health funding ($p < 0.001$), larger resident programmes ($p < 0.001$) and the presence of fellows ($p = 0.007$) were positively associated with research productivity. Composite measures, which combine a number of such contextual factors and do not rely on a single measurement (such as the level of external funding), provide good estimates of productivity and can be used to indicate graduate programmes with strong research incentives (Gordon, Holmes & Maly 1999). Research capacity of the individual, institution and country should be addressed and initiatives should target different levels, including those relating to research trainee, researcher, institution, funding agencies, as well as national and international support (Stineman & Kennedy 2005).

Factors such as obtaining financial aid to attend conferences where networking can take place might be mentioned as a minor aspect of the review of a university nursing school. However, undervaluing this aspect of financial support does not reflect an understanding of the impact of such exposure on the involvement of nurse academics in knowledge production.

Research method and design

Design

A descriptive e-mail survey with one follow-up reminder was used.

TABLE 1: Sampled countries and respondents.

Region	Planned sample		Realised sample	
	Invited sample	N of countries in final sample	N of respondents	% of response by region
Africa	21	5	13	61.9
Europe	30	1	3	10
Far East	20	4	8	40
Middle East	22	4	11	50
North America	7	1	4	20
Total	100	15	39	39

N, is given as a number.

Population and sampling

Since the nursing research endeavours in most countries across the world are located mainly in universities, university nursing schools were targeted. In most African countries (such as Botswana, Rwanda, Malawi, Mozambique), nursing programmes are offered at only one institution, whilst in many others (such as Jordan, Egypt, Nigeria, Kenya) between two and ten universities offer nursing programmes. Three countries stood out as having large numbers of university nursing schools: the USA, Japan and China. On the website of the International Network for Doctoral Education in Nursing (INDEN), only 32 countries with doctoral programmes are listed (INDEN 2012). This is not an exhaustive list: for instance, China is not part of this network although it offers many doctoral programmes. However, this gives some indication of how thinly such programmes are spread internationally.

A convenient sample of countries in each world region that was known to have university nursing programmes (Far East, North America, Middle East and Africa) was identified by the team members from these four regions. From each of these countries each investigator then conveniently generated a list of at least three university-based nurse researchers in each of three countries in the region. The academics were identified from their publications and from the websites of their universities.

The invited sample included 100 nurse researchers from 22 countries. The final sample included 39 (39%) respondents from 15 countries (see Table 1).

Instrument and data collection

The instrument was developed using the contextual factors described in the literature review and extracted from this review. The survey covered the availability of seven categories of support factors inside each country:

- access to postgraduate nursing education
- availability of nurse mentors with appropriate postgraduate qualifications
- appropriate funding resources for research
- availability of enabling funds inside own institution
- acceptability of research funding proposals from nurse or midwifery scientists
- availability of time
- availability of research journals in which to publish – regionally or nationally – and in the language of the researcher.

For each factor a number of criteria were identified which could be used to measure or describe the factor. A method was identified to measure each criterion.

Data collection process

An email with the survey and information document was sent to the target sample of 100 nurse researchers. A reminder e-mail was sent six weeks later. The survey was provided only in English, since it was assumed that in all targeted countries respondents would be able to understand English, even though their home language and even their academic language might be different. A short description of each support factor was provided, and then a set of questions asked. Response formats varied by item. Examples of information requested included the number of nursing doctoral programmes in their country, the percentage of permanent faculty in their own institution who were doctorally prepared and the availability of funds in institutions on a scale from 1 ('yes, relatively easily accessible') to 5 ('no, never'). Respondents were invited to provide qualitative comments. See Figure 1 for the survey items.

Data analysis

All criteria and finally all factors were expressed as a percentage for comparison purposes. The scores of each of the 15 countries were calculated for each item and factor as follows.

- For items where only one correct score was possible, for instance in how many regions of a country master's programmes in nursing were available, the mode of the

responses was entered; that is, the value that appears most often amongst the responses.

- For countries for which data from only one respondent was available, the single respondent's response was used.
- For items where more than one score was possible, such as whether master's programmes were available in the respondent's own workplace, the average score was entered since respondents represented different institutions.
- To calculate a percentage, an ideal (100%) was needed. In some items this was not apparent – for instance, the number of nursing journals available in the country and region or the number of funding sources. In such cases researchers took the highest score amongst the countries as the 100% mark or researchers took a number just above the highest score. In these items the USA scores were excluded, since they were such an outlier that it would have skewed the calculations.

As part of the description of the data from the selected countries, a one way ANOVA test was performed to assess whether the differences between the total scores were based on the economic level of countries in the survey. The validity of the study was facilitated by basing the initial instrument on the current literature, and then adapting it based on the responses received from the different countries. Reliability was addressed by having more than one respondent per country, where possible.

Ethical considerations

The protocol was approved by the Ethics Committee of the University of KwaZulu-Natal, Africa and by the Institutional Review Board of the University of Maryland, USA. The universities in China and Jordan, where the other two

A. Survey of contextual support factors in an individual higher education institution

1. Does the institution offer master's level nursing/midwifery education?
2. What percentage of the permanent faculty members are doctorally prepared?
3. In how many specialty areas are masters or doctorates offered?
4. Indicate whether the following funding is available in your own higher education institution by choosing the most appropriate score on each item:
 - 1 = Yes, relatively easily accessible
 - 2 = Yes, but difficult to access
 - 3 = Yes, but very limited amounts
 - 4 = Sometimes, if funds are available
 - 5 = No, never

Item	Score
Research grants	
Funding to attend research conferences nationally	
Funding to attend research conferences internationally	

5. Please explain how much of the formal time of nurses in academic positions they are supposed to spend on research. Do not comment on whether they can actually do this, but try to give us a % of time formally allocated to research.
Percentage of time allocated to or required to spend on research out of 100% working time: _____

B. National survey

6. How many regions/provinces/states constitute your country?
7. In how many of these regions is master's level nursing/midwifery education offered?
8. In how many of these regions is doctoral level nursing/midwifery education offered?
9. In how many specialty areas are master's degrees offered in your country?
10. Please list all the funding sources INSIDE YOUR COUNTRY that are accessible to nurses/midwives.
11. Please rate the acceptability of nursing/midwifery proposals to funding agencies in your country for each item as Yes or No:
 - 11.1. Nursing/midwifery research is seen as mainstream health research.
 - 11.2. Nursing/midwifery research methodology is seen as acceptable.
 - 11.3. Nursing and midwifery as disciplines are valued for their research contribution.
 - 11.4. Nurses/midwives serve as reviewers for national funding agencies.
 - 11.5. Nurses/midwives serve on national research bodies.
 - 11.6. Nurses are members of the national Academy of Science.
12. List the nursing/midwifery research journals published in your own country.
13. List the multi-professional research journals in your own country and region in which nurses and midwives could publish.

FIGURE 1: Survey instrument assessing institutional and national contextual support for nursing research in a country.

authors work, declined to consider giving ethics approval, since they deal only with studies conducted in their own clinical facilities. The study therefore proceeded with ethics approval from two universities only.

This was considered to be a low-risk study, with no risk to respondents. No respondent was identified by name. The research aims and objectives were provided to each respondent and their positive response to the e-mail inviting them to participate was accepted as informed consent and agreement to participate.

Results

Thirty-nine respondents of the 100 invited (39%) completed the survey. Fifteen countries were represented (see Table 1

and Table 4). Three or more responses were received from 10 of the countries, whilst only one response was received from 5 countries, namely Austria, Iraq, Japan, India and Mozambique. These countries were not excluded for illustrative purposes.

The instrument

The instrument logic, survey items and metrics are presented in Box 1. An instrument addressing 7 factors and 11 criteria was developed. It has a demographic section as well as 20 items addressing the criteria. The items include rating scales with a five-point scale, checklist items (yes/no) and factual or opinion items. See Figure 1 for the final recommended instrument.

Box 1: Instrument logic and components.

Factor 1: Access to postgraduate nursing education

Criteria 1 and 2: Items B1 to B3

Access to nursing education programmes at master's (1) and doctoral (2) level inside the country allows for affordable training in research for individual nurses.

Measurement:

- Identify the regions/districts/provinces/states into which the country is divided.
- Identify in how many of these provinces master's level nursing/midwifery education is available.
- Identify in how many of these regions doctoral level nursing/midwifery education is available.

Criteria 3 and 4: Items A1 & A3; B4

Access to a range of specialties offered locally and nationally makes it possible for researchers to specialise at an advanced level to support their research. A minimum of five specialties were set as a target (general, critical care and trauma, and psychiatric nursing as well as community health nursing and midwifery)

Measurement:

- In each of the sampled HEI offering master's education in nursing/midwifery, identify the number of specialty areas in which such qualifications are offered.
- In the country as a whole, how many specialties are offered out of a possible five?

Metrics: Four percentages.

Factor 2: Availability of nurse mentors with appropriate postgraduate qualification

Criterion 5: Item A2

Access to well-prepared, experienced nurse researchers to act as mentors and role models allows for informal learning in research in the field of the novice researcher, both locally and nationally.

Measurement:

- In sampled HEIs offering master's and/or doctoral education in nursing/midwifery, identify what percentage of permanent faculty is doctorally prepared.

Metrics: One percentage.

Factor 3: Appropriate funding sources

Criterion 6: Item A4

A variety or funding sources for nursing/midwifery research inside the country will allow for sustained research effort. A target of ten sources were set at a national level, since nursing is a discipline with many specialty areas, and limited sources will limit the development of this range of areas.

Measurement:

- The number of funding sources available to nurse/midwifery researchers inside the country or region. Self-funded research and international agencies were not counted.

Metrics: Percentage out of 10 possible sources.

Factor 4: Availability of enabling funds locally

Criterion 7: Item A4

Seed funding available inside local HEI or other workplace makes it possible for researchers to launch research careers and larger research projects.

Measurement:

- The availability of the following funding is available in HEIs:
 - Research grants
 - Funding to attend research conferences nationally
 - Funding to attend research conferences internationally

Metrics: Percentage out of three supportive factors

Factor 5: Acceptability of funding proposals and nurse researchers

Criterion 8: Item B6

Nursing/midwifery research proposals and nurses/midwives as researchers are generally valued and supported within the science community of the country.

Measurement:

- The general perception about nursing/midwifery research nationally.
- The representation of nurses/midwives on national research policy and funding bodies.

Metrics: Percentage out of six status factors.

Factor 6: Availability of time

Criterion 9: Item A5

Nurse scientists have to have adequate time in their work setting to engage in research.

Measurement:

- Proportion of formal working time officially allocated to research.

Metric: Percentage of working time.

Factor 7: Availability of research journals for publication of research work

Criteria 10 and 11: Items B7 & B8

A national nursing research journal (10) and national and regional multi-professional journals (11) in which research can be published will enhance dissemination of research.

Measurement:

- The number of nursing/midwifery research journals in the country.
- The number of multi-professional research journals in the country or the region in which nurses and midwives could publish.

Metrics:

Percentage of nursing journals out of one.

Add national and regional journals and calculate percentage of multi-professional journals out of five.

The level of support across the 15 countries

The average total level of support across all countries was 26.8% with a standard deviation of 14.97 (see Table 2). The minimum country score was 1.58 and the maximum was 61.92. The greatest variability was in the category availability of publishing opportunities (factor 7) and the least variability in factors 4 (enabling support locally) and 6 (time). Factor 4 was also the factor with the lowest average score (19.69%). The factor with the highest average score was the status of nursing research (factor 5).

The scores of the particular countries are summarised in Table 3. The two lowest scoring countries (Mozambique and Rwanda) had zero for more than one factor and were both in Africa, but the third-lowest scoring country was in Europe (Austria).

A one-way ANOVA test was performed to assess whether differences in the total scores, indicating the level of contextual support for nursing research, were based on the economic level of countries in the survey. The economic level referred to the gross national income (GNI) as classified by the World Bank (see <http://data.worldbank.org>), with countries classified into three major groups (low income, middle income and high income). Most of the countries were in the high income (6) or middle income (6) category, but three were in the low income category (see Table 3 for classification). The mean score of the three low-income

countries was 6.78% ($SD = 5.43$), that of the six middle-income countries 28.97% ($SD = 7.71$) and that of the six high-income countries 33.5% ($SD = 15.6$). The relationship was significant at the ≤ 0.05 level (1532.376, df 2, mean square 766.188, F 5.084, significance 0.025), which means that the level of income of the country had a significant impact on the level of contextual support for nursing research.

Standard deviations (SD) were then used to classify countries categorically (see Table 4). In 40% (6 of the 15 countries) nursing research receives average contextual support (within 1 SD from the average across all countries), whilst high contextual support (above 1 SD across countries) and low contextual support (below 1 SD across countries) are provided in 2 countries (13% each).

Discussion and recommendations

How can contextual support for nursing research be measured in a country?

With the quantitative results obtained by using this questionnaire, it would seem that this is a tool that can be used to measure the contextual support for nursing research in a country. The survey items and conceptual definitions can be adapted to each country's goals. For instance, five specialty areas in postgraduate nursing education might be an inappropriate target for smaller countries. Countries may choose an alternate ideal number of specialty areas based on their current health needs.

TABLE 2: Total level of support in 15 countries across seven factors (in %).

Factor	Minimum	Maximum	Mean	SD
1. Accessibility of appropriate research training	0	85	31.91	24.99
2. Availability of research mentors	0	100	30.31	30.22
3. Availability of research funding	0	100	27.50	29.67
4. Availability of enabling support locally	9	33	19.69	7.22
5. Status of nursing research	0	100	49.44	36.29
6. Availability of time for research	10	50	28.56	10.89
7. Availability of publishing opportunities	0	100	41.28	43.67
Average country score	1.58	61.92	26.80	14.97%

SD, standard deviation.

TABLE 3: Scores on all factors of 15 countries.

Country	Access	Mentors	Funding	Enabling	Status	Time	Publish	Total %
1. Bahrain [‡]	6	2	25	23	50	28	82	19.8
2. China	57	14	20	21	0	23	38	25.5
3. DRC [†]	10	3	0	11	43	22	20	12.4
4. Israel [‡]	36	34	35	30	58	30	38	29.9
5. Jordan	30	72	20	23	83	27	33	34.4
6. Nigeria	19	54	5	13	29	33	30	23.2
7. Rwanda [†]	8	0	25	16	0	20	5	6.3
8. South Africa	74	38	25	26	44	30	60	41.8
9. South Korea [‡]	0	100	20	23	100	17	38	39
10. USA [‡]	85	67	100	23	100	27	100	71.7
11. Austria [‡]	32	1	20	9	0	50	5	13.8
12. India	39	13	15	22	100	30	10	27.3
13. Iraq	29	20	10	13	67	50	2	21.7
14. Japan [‡]	37	25	15	33	67	20	100	42.4
15. Mozambique [†]	3	0	5	9	0	10	0	1.6

[†], Low income.

[‡], High income on 2010 classification.

TABLE 4: Five levels of contextual support for nursing research.

Criteria	Support	Country
More than 1 SD less than average support (Less than 11.06)	Low support	15. Mozambique 7. Rwanda
More than 0.5 SD less than average support (11.06 to 18.78)	Less than average support	3. DRCongo 11. Austria
Within 0.5 SD from mean (18.78 to 34.24)	Average support	1. Bahrain 2. China 4. Israel 6. Nigeria 12. India 13. Iraq
More than 0.5 SD more than average (34.24 to 41.96)	More than average support	5. Jordan 8. South Africa 9. South Korea
More than 1 SD more than average support (41.96 or more)	High support	10. USA 14. Japan

SD, standard deviation.

Respondents noted that the survey asked national and institutional questions, and not all of them had access to reliable national information. The final instrument was therefore divided into an institutional section to be completed by academics, and a national section to be completed by an appropriate body or individual.

Whilst the economic classification of the country can be used as a shortcut to identifying the probable level of contextual support, there are enough exceptions to make it essential that national studies be done. It is therefore strongly recommended that national surveys be conducted and national metrics chosen. This will also allow for the survey to be undertaken in the most appropriate language.

What is the contextual support for nursing research in selected countries of the world?

The results of this study indicate that contextual support for nurse researchers differs markedly, and that this preliminary work can be used to categorise countries' contextual support for nursing research. For example, countries with very limited nursing research traditions, such as Mozambique (with no master's programmes in nursing) have a low level of support for nursing research. The USA has a high level of contextual support, with its strong tradition in nursing research. The survey can provide a baseline assessment of the country's resources to help nurse leaders plan for development of research programmes over time.

With an average support score across all countries of only 26.51% in this preliminary study, global support for nursing research requires attention. Even the countries classified as 'average' have very low scores in relation to certain factors. For instance, in China the national score for the status of nursing research is zero. The different scores across factors seem to provide a clear indication of where nursing associations should concentrate their attention nationally if they are interested in raising the standards of nursing research. It is recommended that leaders in each country that achieved low scores should conduct a national baseline

survey using this instrument. The results can then be used to lobby for and plan specific improvements to develop the contextual support for nursing research.

It does not seem as though one can classify a region (such as Africa or Europe) as one area with regard to national support for nursing research. A good example is the African continent, on which countries vary from above average support (South Africa) to low support (Mozambique and Rwanda). A similar pattern can be seen in the Middle East, although these countries are only one category apart. Therefore, the approach of using the standard deviation of a larger group of countries seems to be a valid way of classifying countries just as a means for some level of comparison. It is important that the results of national surveys be collected internationally and collated to ensure up-to-date standard deviations to allow for classification and comparison (World Health Organization 2011). This could be done on a website such as the INDEN website.

Limitations

This study has a number of limitations, including sampling bias and using an English survey for all countries. Response rates were low, so the sample was not representative. The data should, therefore, be interpreted with caution. In addition, some respondents stated that they did not have the national figures so some data was missing.

Conclusion

This study indicates that, globally, there are wide variances in contextual support for nurse researchers. Generating knowledge to promote health for all people is dependent on international efforts and teams focused on common health problems. Advances in global research will be inhibited by variances in the professional development of investigators. A major factor that impedes the professional development of nurse scientists is the variance in resources, both material and human, between countries. The lack of description of international resources and the inability to identify areas on which to focus further strategic efforts to build nursing science is an obstacle to further progress.

In the globalised world, it is increasingly important for institutions and agencies to be able to make a valid evaluation of researchers. It is especially important for nurse scientists from developing countries that they not be discriminated against based on the poor research infrastructure in which they are working. A case in point is the newly established Researcher's Hall of Fame initiated by Sigma Theta Tau International (see <http://www.nursingsociety.org>).

To support the growth of nursing science globally, leaders should assess the contextual support for nurse researchers and strategically plan for further development of infrastructure required to promote the health of people worldwide. Identifying clearly what the level of contextual support is in their own country might allow nurse scientists

to assess strengths and weaknesses relative to other countries and develop strategic initiatives to improve contextual support in their own countries.

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Competing interests

The authors declare that they have no financial or personal relationship(s) which may have inappropriately influenced them in writing this article.

Authors' contributions

L.R.U (University of KwaZulu-Natal) was project leader, whilst R.P.N. (University of Maryland), A.O. (Jordan University of Science and Technology) and X.L. (Peking Union Medical College) contributed to the development of the instrument, the literature review and the data collection. L.R.U. and R.P.N. wrote and corrected the manuscript.

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