Support Mechanisms for Research Generation and Application for Post–Graduate Students in Four Universities in Uganda

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Abstract

Background

Post-graduate students worldwide complete a research thesis in partial fulfillment of their degree requirements. This study identified and evaluated support mechanisms for research generation and utilization for masters’ students in health institutions of higher learning in Uganda.

Methods

A self administered cross-sectional survey using a modified Self Assessment Tool for Research Institutions (SATORI). Post-graduate students were requested to encircle the most appropriate response in a Likert scale from 1 where the ‘situation was unfavorable and/or there was a need for an intervention’; to 5 where the ‘situation was good or needed no intervention’. These questions were asked under four domains: the ‘research question’; ‘knowledge production’; ‘knowledge transfer’ and ‘promoting use of evidence’. Mean scores of individual questions and aggregate means under the four domains were computed; and then compared to identify areas of strengths and gaps that required action.

Results

Most of the respondents returned their questionnaires, 185 of 258 (71.7%) and only 79 (42.7%) had their theses submitted for examination. Three of the four domains scored below the mid-level domain score of 3, that is “the situation is neither favorable nor unfavorable”, table 2. Specifically, the domain of “Proposal development for post-graduate research project” had the highest mean score of 3.53 out of the maximum 5. Areas requiring substantial improvements were, priority setting during “Research question identification”, which had the least mean score of 2.12. This was followed by “promoting use of post-graduate research products”, tying at 2.28 mean scores each. The domain, “Knowledge transfer of post-graduate research products”, had an above average mean score that is 2.75.

Conclusions

This study reports that existing research support mechanisms for post-graduate students in Uganda encourage access to supervisors and mentors. Secondly, post-graduate students engagement with research users was limited, as was awareness of intellectual property rights. Views of supervisors and mentors were not captured, a subject for future research.

Introduction

Post-graduate students worldwide complete a research thesis in partial fulfillment of their degree requirements (Medical Council of India, 2000). Typically, post-graduate students in institutions of higher learning design, conduct and report their research work and in the process inculcate critical skills of the scientific method. Supervisors and mentors guide post-graduate students through question identification, proposal development and finding solutions to public health problems in their area of
interest. The full breadth of thesis writing involves a field exercise of collecting data from study participants in hospital or the community before cleaning and analysis. Finally, the student writes a full research report and defends these results in a dissertation defence before being permitted to graduate (Dhaliwal et al., 2010, Ismail et al., 2011, Lessing and Schulze, 2002). However, these processes have not been evaluated formally in Uganda.

Assessment of post-graduate students research support mechanisms is crucial to inform policy action at universities in Uganda and similar settings globally. More often than not, it is the students who are assessed by a panel of university dissertation examiners. Yet, in order to implement comprehensive solutions to improve the quality of the thesis process, it is vital students contribute to this assessment and point out system challenges. Previous studies of South African (Lessing and Schulze, 2002) and Malaysian (Ismail et al., 2011) post-graduates have reported the thesis supervision and academic support, albeit did not document research to uptake for decision-making or policy change.

Several approaches have been proposed to assess performance of research entities. A unique one is the knowledge translation SATORI, a self-assessment tool for research institutes (Gholami et al., 2011b), which was designed to assess the status of knowledge translation in research organizations. There is a gap between knowledge generated and the action taken informed by this knowledge particularly for post-graduate students (Bennett and Jessani, 2011). Indeed, knowledge translation is a cluster of activities that bridge this “know–do” void (Tetroe, 2007).

Therefore, the objective of this study was to identify and evaluate support mechanisms for research generation and utilization for masters’ students in health institutions of higher learning in Uganda.

**Methods**

**Ethical considerations**

The School of Medicine Research & Ethics Committee, the Uganda National Council for Science & Technology (HS 3268) and Office of the President of Uganda (ADM/154/212/01) approved this study. Briefly, post-graduate students were given written and signed informed consent, with respect to all the principles of beneficence, non-malfeasance and justice adhered to.

**Design**

This was a cross-sectional survey using a modified Self Assessment Tool for Research Institutions (SATORI), (Majdzadeh et al., 2008, Gholami et al., 2011a). The cross-sectional design provided more recent information about the existing mechanisms to conduct and apply students’ research and was feasible in terms of resource input. The SATORI was piloted among 5 students for face validity and content and modified to suit the Ugandan context (m-SATORI). Prior to this study, he original SATORI was used to evaluate knowledge translation (KT) strategies in Tehran University of Medical Sciences (TUMS) (Gholami et al., 2011a). Noteworthy, Gholami and colleagues preferred to administer this tool to a
mixed group of staff at TUMS, for completion during a discussion meeting. However, in an environment comprising of students and teachers, the power hierarchy is likely to compromise responses of students (Bernard, 2011). Hence, students in our study responded individually.

Setting and sampling

Four health institutions of higher learning were purposively selected. The College of Health Sciences, Makerere University (MakCHS) and Mbarara University of Science and Technology (MUST) represented the public education system. MUST is located about 250 kilometers from Kampala city in Mbarara district, western Uganda and provides clinical and public health post – graduate training. MUST was opened in 1989 and it was not until the late 1990s that its first post – graduate student was channeled out (MUST, 2013). The two private universities were: Uganda Martyrs University, Nkozi (UMU), was opened in 1993 (UMU, 1993); and the Uganda Christian University, Mukono, (UCU), which was established in 1997 (UCU, 1997). UMU is located about 100 kilometers from the capital, whilst UCU is 30 kilometers away. UCU and UMU were the first private universities in Uganda to provide post–graduate training in Public Health related courses.

Sample size estimation

The average of the mean scores for KT activities at TUMS across the four domains of SATORI was \((2.26 + 2.92 + 2 + 1.89)/4 = 2.27\) out of 5, which was proportionally 45.4% (Gholami et al., 2011a). Since the level of KT activity in Ugandan universities was unknown, it was reasonable to estimate this score at the midpoint of 50%. The assumptions were that at least 1,000 post–graduate students were enrolled of whom about 300 were in advanced stages of their research projects. Taking a design effect of 1.75, ± 5% precision and adjusting for 10% non–response, the sample size was \(n_0 = 536\). Further adjusting for a small population of those in advanced stages, \(N=300\) using Cochran’s formula \(n_1 = n_0 / [1+ (n_0 - 1)/N]\) the estimated required sample size for the survey was 192 participants (Cochran, 1963, Dean et al., 2009).

Data collection

We anticipated that the self – assessment nature and individual responses of this m–SATORI would improve acceptability by respondents (Bernard, 2011). This m–SATORI used a 5–level Likert item (Likert, 1932) to capture data. Students were instructed to encircle the most appropriate response as 1 where the situation was unfavorable and/or there was a need for an intervention; and 5 where the situation was good and needed no intervention. Responses 2, 3 and 4 represented a spectrum on a sliding scale where 3 was the midpoint and implied the situation was neither favorable nor unfavorable.

These questions were asked under four domains: a) The research question – to what extent does your department support you to identify research needs of health research users and convert them into research questions?; b) Knowledge production – to what extent does your department provide support in proposal development and research conduct? c) Knowledge transfer – do we have appropriate means for
disseminating the organizations’ research results to their target audiences? d) Promoting use of evidence – do we help decision makers utilize research results better?

Analysis and outcome measures

The data was summarized into the following domains: a) the question of research, b) knowledge production, c) knowledge transfer and, d) promoting use of evidence. Mean scores of individual questions and aggregate means under the four domains were computed. Mean scores were compared across the four domains to identify areas of strengths and gaps that required intervention. Regression analyses were not done.

Results

Characteristics of respondents

Most of the respondents returned their questionnaires, 185 of 258 (71.7%), table 1. Majority of the post–graduates were in the fourth decade of their lives (55.7%), married (58.4%), Medics (71.9%) and from MakCHS (50.3%). In terms of the nature of their post–graduate courses, majority by far were full–time students (84.3%), pursuing clinical courses (67%) and under self–sponsorship (68.6%). Four fths (81.6%) had presented their proposals for approval by the local university Institutional Research and Ethics Boards whilst only 79 (42.7%) had their theses submitted for examination.

Mean score per domain of postgraduate research support activities at the level of department

Three of the four domains scored below the mid–level domain score of 3, that is “the situation is neither favorable nor unfavorable”, table 2. Level 1 implied that, “the situation is quite unfavorable and/or there is a dire need for intervention”, whilst at level 5, “the situation is good and needs no intervention”. Specifically, the domain of “Proposal development for post-graduate research project” had the highest mean score of 3.53 out of the maximum 5. Areas requiring substantial improvements were, priority setting during “Research question identification”, which had the least mean score of 2.12. This was followed by “promoting use of post-graduate research products”, tying at 2.28 mean scores each. The domain, “Knowledge transfer of post-graduate research products”, had an above average mean score that is 2.75.

Mean score and standard deviation for each statement in domain

Proposal development

Overall, students reported good support from their supervisors, table 3. Post–graduate students easily accessed mentors during proposal development, which scored highest in the whole assessments with a mean of 4.10 (s.d=1.13). In this sub–section, considering the ‘PICO’ approach in research question development had the least mean score of 2.64 (s.d=1.58). ‘PICO’ is a framework for research question development that stands for population, intervention, comparator and outcome elements.
Engagement for priority setting and knowledge transfer

A further dissection of the specific areas of concern revealed that, of priority were eight areas. In terms of research question development, these assessed whether the department: (a) developed a list of priority questions for further research, with a below average mean score of 2.05 and (s.d = 1.26); (b) organized research question identification meetings or seminars with research producers, mean score 2.35 (s.d = 1.43) and; (c) held regular meetings with health research users or decision makers, mean score 1.96 (s.d = 1.29). Indeed, very few post-graduate students stated they interacted with decision makers during research question identification, (17.3%) or identified research questions from an existing public list of priority questions (25.9%).

Across the four domains, the interaction between post-graduate researchers and research purveyors or users had the least mean scores. Specific areas were whether the department, (d) mapped stakeholders by preparing a list of potential research results users for each post-graduate research project, 2.18 (s.d = 1.27); (e) encouraged post-graduate student researchers to participate in technical committees of the Uganda ministry of health or districts or hospitals or even NGOs, that help in decision-making, 1.84 (s.d = 1.28); (f) saw the need for regular communications with media and target for transfer of research-based evidence, 1.81 (s.d = 1.15); (g) sent decision-makers reminders to follow the (post-graduate) research results that we have previously sent them, 1.68 (s.d = 1.14).

Intellectual property

Notably, whether (h) intellectual property rights existed which support researchers who help disseminate research results prior to their publication in journals scored low as well, 2.21 (s.d = 1.32).

Other areas that had sub-optimal, above average mean scores

Finally, there are important areas that need attention despite posting above the average mean scores. These were predominantly in the ‘knowledge transfer’ and ‘promoting use of knowledge’ domains. Teaching evidence based medicine and the peer review process were highly ranked under the knowledge transfer domain, with means scores 3.44 (s.d = 1.41) and 3.35 (s.d = 1.38) respectively. Still, the availability of skilled manpower, curriculum content and an appropriate activity schedule for knowledge transfer at department level had sub-optimal mean scores between 2.58 (s.d = 1.46) for “criteria for evaluation of researchers’ knowledge transfer activities” and 2.92 (s.d = 1.47) for “knowledge transfer and utilization of research results exist in the general program of research methodology training”, respectively in table 2.

Discussion

Principal findings

In sum, this study highlights that support mechanisms exist for research production by post-graduate students in four Ugandan universities. On the one hand, the most highly rated was the easy access to
supervisors and mentors during proposal development. On the other hand, there were eight areas of improvement around research priority setting and communication. Specifically, interaction between research users, that is, decision takers and the media fraternity were limited at the priority setting stage or even results dissemination. Also, I found that awareness of intellectual property rights was low among the post-graduate student researchers.

Findings in relation to other studies

Indeed the findings of this study were unique, yet consistent with the evidence base on research support mechanisms for student’s world over. First, previous studies demonstrated that students would be more productive in research if their supervisors or mentors supported their projects in practical ways (Ismail et al., 2011, Lessing and Schulze, 2002) (seminars, workshops, and co-supervision); were given protected time and funded by specific targeted grants (Brewer et al., 1999, Bullen and Reeve, 2011).

Secondly, an integrated approach in this three-way interaction, research producers, purveyors and consumers increases the uptake and use of research evidence (Oliver et al., 2014, Tricco et al., 2015). The unique discoveries were specific to the sub-optimal engagement activities with end users of research, decision takers and media fraternity. There is hardly any evidence out there capturing views about graduate students research support and engagement with end users of this research, which this study has provided for the first time. Noteworthy, our earlier work documented that indeed findings from post-graduate students theses informed decision-making documents of international agencies including the World Health Organization (Obuku et al., 2018, Obuku et al., 2017). Taken together, it probable that students strive to push their findings to the decision making table via publications rather than active engagement with end users of their research.

Obviously, intellectual property protection is an important interest for researchers, students, policy makers and practitioners (Patel, 1995). However, as with previous studies, post – graduate students were not properly informed or taught about the concept of intellectual property protection (Ahmed and Varun, 2017). Intellectual property rights safeguard discoveries and give lawful control to the discoverer in the use of their discoveries. However, only one in five post-graduate students at Makerere University had their thesis published suggesting a lower demand for intellectual property rights information.

Study limitations and strengths

This study had important strengths including novelty. To the best of my knowledge, this is the first study in Uganda that has documented the views of post-graduate students about how they are supported to produce their research projects. Further, this is the first study globally to interrogate post-graduate students engagement activities with research users. Hence, this study identified a key area for improvement: engagement with decision takers and the media for research priorities and research communication beyond scientific publications. In addition, the study had an important representation of students from four universities, in the public and private education sectors making the findings more representative.
Despite these crucial results, there were shortcomings. One, the study could have conducted qualitative interviews of post-graduate students, which missed the unique aspects of their lived experience. Two, the supervisors and mentors views were not captured too, hence did not provide a comprehensive outlook in identifying support barriers such as university staffing capacity challenges. Three, the study did not compare performance across departments or schools or universities and instead lumped up the findings, as pre-written in the protocol approved by the ethics committee. Such a purpose would not be to “name and shame”, rather identifying bottlenecks and share in the appropriate private forum with a view of strengthening these.

Implications for policy change

Clearly, the findings suggest a number of policy options. Obvious benefits would accrue from creating opportunities for decision makers to input into the priority setting process for post-graduate students research. Many a time decision makers do not know where to access quality research. Thus, providing for time in the research curriculum or establishing bridges to existing platforms where students interact with decision makers is one of the many cost-efficient approaches. Examples of such low hanging fruit is technical working groups at the ministry of health, or national disease control programs (AIDS, TB, Malaria), district health teams or health related NGOs.

Beyond that, sharing existing research priority lists or regularly refining and updating them would be important in research question identification. As well, rewarding such engagement in the post-graduate research project assessment scheme would incentivize post-graduate students to demonstrate how they engaged decision takers at various levels including hospitals and districts health systems.

An area for attention in post-graduate research is in research communication. “...You don't really understand something unless you can explain it to your grandmother...”, is a quote attributed to the eminent scientist Albert Einstein (Grossman, 2014). In many ways, this “grandmother” metaphor would represent the general public in society. Media professionals are the bridge through which Ugandan researchers would reach the community (Kaye et al., 2011). This interaction would be achieved at priority setting and results communication workshops specifically designed for journalists and post-graduate students in medical fields. Relevant departments that teach journalism, media and communication studies in these Ugandan universities could collaborate with medical and public health schools to enhance science communication.

Implications for future research

Future research should get views of supervisors and mentors, using qualitative research on the barriers, facilitators and solutions to support mechanisms for post-graduate students in Uganda. Secondly, comparison of different departments or universities performance would be enlightening and should go through the institutional research administrative approval processes for legitimacy. Third, prospective assessments of deliberate interaction platforms between post-graduate students and research users, decision makers and the media, would be informative.
Conclusions

This study reports that existing research support mechanisms for post–graduate students in Uganda encourage access to supervisors and mentors. Secondly, post–graduate students engagement with research users was limited, as was awareness of intellectual property rights. Views of supervisors and mentors were not captured, a subject for future research.

Declarations

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Author contribution

The following authors participated in various ways: EAO, NKS, JNL, DKM, CK developed the idea into a concept; GM, RA and EAO performed data collection and analysis; EAO drafted the manuscript; EAO, RA, GM, JNL, NKS, DKM, FS and CK reviewed, appraised and approved the final version of the manuscript.

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References

AHMED, S. & VARUN, P. K. 2017. Awareness regarding intellectual property rights a survey amongst the PG and Ph. D. students of Babasaheb Bhimrao Ambedkar University, Lucknow.

BENNETT, G. & JESSANI, N. 2011. *The knowledge translation toolkit: bridging the know-do gap: a resource for researchers*, SAGE Publications India.

BERNARD, H. R. 2011. *Research Methods in Anthropology: Qualitative and Quantitative Approaches* Lanham, MD, Alta Mira Press

BREWER, G. A., DOUGLAS, J. W., FACER, R. L. & O’TOOLE JR, L. J. 1999. Determinants of graduate research productivity in doctoral programs of public administration. *Public Administration Review*, 373-382.

BULLEN, C. R. & REEVE, J. 2011. Turning postgraduate students’ research into publications: a survey of New Zealand masters in public health students. *Asia Pac J Public Health*, 23, 801-9.

COCHRAN, W. G. 1963. *Sampling Techniques*, New York, John Wiley and Sons, Inc.

DEAN, A. G., SULLIVAN, K. M. & SOE, M. M. 2009. OpenEpi - a web-based epidemiologic and statistical calculator for public health *Public Health Report* 124, 471 – 474.

DHALIWAL, U., SINGH, N. & BHATIA, A. 2010. Masters theses from a university medical college: publication in indexed scientific journals. *Indian J Ophthalmol*, 58, 101-4.

GHOLAMI, J., MAJDADEH, R., NEDJAT, S., MALEKI, K., ASHOORKHANI, M. & YAZDIZADEH, B. 2011a. How should we assess knowledge translation in research organizations; designing a knowledge translation self-assessment tool for research institutes (SATORI). *Health Res Policy Syst*, 9, 10.

GHOLAMI, J., MAJDADEH, R., NEDJAT, S., NEDJAT, S., MALEKI, K., ASHOORKHANI, M. & YAZDIZADEH, B. 2011b. How should we assess knowledge translation in research organizations; designing a knowledge translation self-assessment tool for research institutes (SATORI). *Health research policy and systems*, 9, 10.
GROSSMAN, R. 2014. Science communication: could you explain it to your granny? Notes & Theories of Science. Available from: https://www.theguardian.com/science/blog/2014/oct/10/science-communicators-quantum-physics-granny [Accessed 06th September 2020].

ISMAIL, A., ABIDDIN, N. Z. & HASSAN, A. 2011. Improving the Development of Postgraduates’ Research and Supervision. *International Education Studies, 4*, 78-89.

KAYE, D. K., BAKYAWA, J., KAK, N. & SEWANKAMBO, N. 2011. The medias and health scientists perceptions of strategies and priorities for nurturing positive scientist-media interaction for communicating health research in Uganda. *Journal of Media and Communication Studies, 3*, 112-117.

LESSING, A. & SCHULZE, S. 2002. Postgraduate supervision and academic support: students' perceptions. *South African Journal of Higher Education, 16*, 139-149.

LIKERT, R. 1932. A Technique for the Measurement of Attitudes. *Archives of Psychology* 140, 1–55.

MAJDZADEH, R., SADIGHI, J., NEJAT, S., MAHANI, A. S. & GHOLAMI, J. 2008. Knowledge translation for research utilization: design of a knowledge translation model at Tehran University of Medical Sciences. *J Contin Educ Health Prof, 28*, 270-7.

MEDICAL COUNCIL OF INDIA 2000. Postgraduate medical education regulations. The Gazette of India. 2000. Part III: Section 4. Available from: http://www.mciindia.org/know/rules/rules_pg.htm.

MUST. 2013. *Mbarara University of Science and Technology: Faculty of Medicine* [Online]. Mbarara, Uganda. Available: http://www.must.ac.ug/academic-units/faculty-medicine [Accessed 20.06.2013].

OBUKU, E., SEWANKAMBO, N., MAFIGIRI, D., SENGGOBA, F., KARAMAGI, C. & LAVIS, J. 2018. Use of postgraduate students' research in evidence informed health policies: a case study of Makerere University College of Health Sciences, Uganda. *Health research policy and systems, 16*, 77.

OBUKU, E. A., LAVIS, J. N., KINENGYERE, A., MAFIGIRI, D. K., SENGGOBA, F., KARAMAGI, C. & SEWANKAMBO, N. K. 2017. Where is students' research in evidence-informed decision-making in health? Assessing productivity and use of postgraduate students' research in low- and middle-income countries: a systematic review. *Health Res Policy Syst, 15*, 18.

OLIVER, K., INNVAR, S., LORENC, T., WOODMAN, J. & THOMAS, J. 2014. A systematic review of barriers to and facilitators of the use of evidence by policymakers. *BMC health services research, 14*, 2.

PATEL, S. H. 1995. Graduate students' ownership and attribution rights in intellectual property. *Ind. LJ, 71*, 481.

TETROE, J. 2007. Knowledge translation at the Canadian Institutes of Health Research: a primer. *Focus Technical Brief, 18*, 1-8.
TRICCO, A. C., CARDOSO, R., THOMAS, S. M., MOTIWALA, S., SULLIVAN, S., KEALEY, M. R., HEMMELGARN, B., OUIMET, M., HILLMER, M. P. & PERRIER, L. 2015. Barriers and facilitators to uptake of systematic reviews by policy makers and health care managers: a scoping review. *Implementation Science*, 11, 4.

UCU 1997. Uganda Christian University: A Centre of Excellence in the Heart of Africa https://www.ucu.ac.ug/about/facts/history Accessed 15.06.2013.

UMU 1993. Uganda Martyrs University: In Virtue and Wisdom Lead the World: https://www.umu.ac.ug/ Accessed 15.06.2013.

**Tables**

**Table 1: Baseline characteristics of post–graduate students at four universities in Uganda**

| Variable                  | N=185 (%) | Variable                  | N=185 (%) |
|---------------------------|-----------|---------------------------|-----------|
| **Age (years)**           |           | **Course nature**         |           |
| 18–30                     | 64 (34.6) | Full time                 | 156 (84.3)|
| 31–40                     | 103 (55.7)| Distance learning         | 29 (15.7)|
| 41–50+                    | 18 (9.7)  | **Sponsorship status**    |           |
| **Marital status**        |           | Self                      | 127 (68.6)|
| Married/Cohabiting        | 108 (58.4)| Funder                    | 58 (31.4)|
| Never Married             | 74 (40)   | **Proposal status**       |           |
| Separated/Divorced        | 3 (1.6)   | Submitted                 | 151 (81.6)|
| **University**            |           | Not submitted             | 34 (18.4)|
| MakCHS                    | 93 (50.3) | **Thesis status**         |           |
| MUST                      | 45 (24.3) | Submitted                 | 79 (42.7)|
| UCU                       | 27 (14.6) | Not submitted             | 106 (57.3)|
| UMU                       | 20 (10.8) | **PG Degree Course**      |           |
| **Professional qual.**    |           | MMED                      | 124 (67) |
| Medical Doctor            | 133 (71.9)| MPH/PPM                   | 50 (27)  |
| Nursing/Midwifery         | 12 (6.5)  | MSc. EpiBio/MSHR/Clin. Trials | 6 (3.2) |
| Clinical Officer          | 11 (6)    | MSc. Pharmacology         | 5 (2.7)  |
| Pharmacy                  | 9 (4.8)   |                           |           |
| Other professions         | 20 (10.8) |                           |           |
MMed – Masters of Medicine, (Medicine, Surgery, Paediatrics, Obstetrics & Gyneacology); MPH – Masters of Public Health, MHSR – Masters Health Services Research; MSc. – Master of Science; EpiBio. – Clinical Epidemiology & Biostatistics; Clin. Trials – Clinical Trials; PPM – Project Planning & Management

MakCHS – Makerere University College of Health sciences; MUST – Mbarara University of Science & Technology; UCU – Uganda Christian University; UMU – Uganda Marty’s University

Table 2: Mean score per domain of postgraduate research support activities at departmental level

| Domains                                           | N=185 | Mean (s.d)  |
|----------------------------------------------------|-------|-------------|
| Research question identification (priority setting)| 139   | 2.12 (1.08) |
| Proposal development for post-graduate research project | 180   | 3.53 (0.97) |
| Knowledge transfer of post-graduate research products | 158   | 2.75 (0.88) |
| Promoting use of post-graduate research products   | 180   | 2.28 (1.03) |

Range, levels 1 – 5; level 1 – The situation is quite unfavorable and/or there is a dire need for intervention; level 5 – The situation is good and needs no intervention.

Table 3: Mean score and standard deviation for each statement in domain
### Domain 1: Research Question Development at departmental & individual effort level, N=139 (s.d)

| My unit or department or faculty: | Mean (s.d.) |
|----------------------------------|-------------|
| (a) Develops a list of priority questions for further research | 2.05 (1.26) |
| (b) Organizes research question identification meetings or seminars with research producers | 2.35 (1.43) |
| (c) Holds regular meetings with health research users | 1.96 (1.29) |

**During the process of identifying my research question, I:**

| Yes | No |
|-----|----|
| (d) Identified a health related problem during the course of my work | 127 (91.4) 12 (8.6) |
| (e) Identified a gap in literature through reading a systematic review | 90 (64.8) 49 (35.7) |
| (f) Identified a gap in literature through reading a single study article | 27 (19.4) 112 (80.6) |
| (g) Consulted my colleagues to identify a suitable research question | 72 (51.8) 67 (48.2) |
| (h) Consulted my research mentor or potential supervisor | 100 (71.9) 39 (28.1) |
| (i) Identified a question from an existing project where I am affiliated | 30 (21.6) 109 (78.4) |
| (j) Identified a question from an existing public list of priority questions | 36 (25.9) 103 (74.1) |
| (k) Identified a question through interaction with decision makers | 24 (17.3) 115 (82.7) |

### Domain 2: Proposal development. In conducting your research project, which of the following applies to your department or faculty, N=180 (s.d)

| | |
|---|---|
| (a) Assigned a supervisor/mentor | 3.82 (1.56) |
| (b) Accessed university guidelines/resources | 3.98 (1.28) |
| (c) Accessed my supervisor/mentor easily | 4.10 (1.13) |
| (d) Accessed alternative online resources | 3.12 (1.59) |
| (e) Considered the PICO approach in research question development | 2.64 (1.58) |

### Domain 3: Knowledge transfer. In conducting your research project, which of the following applies to your department or faculty? N=158 (s.d)

| | |
|---|---|
| (a) There is a process that determines which research results can be transferred to the target audiences | 2.67 (1.44) |
| (b) Research results are peer reviewed prior to knowledge dissemination or transfer | 3.35 (1.38) |
20. Knowledge transfer and utilization of research results exist in the general program of research methodology training 2.92 (1.47)

21. I am familiar with the topic of knowledge translation and how to perform it 2.91 (1.39)

22. I am familiar with converting research results into actionable messages appropriate to the target audience. 3.08 (1.32)

23. I am familiar with communication skills for knowledge transfer 3.15 (1.33)

24. A list of potential (postgraduate student) research result users is prepared for each research project 2.18 (1.27)

25. The necessary structures and/or manpower are available for strengthening knowledge transfer in our department. 2.65 (1.39)

26. The framework of students research projects' final reports is such that decision makers can easily point out the actionable message 2.85 (1.24)

27. Student researchers can provide the results of their research through the web and/or electronic banks. 2.75 (1.43)

28. There is regular communications with media and target for transfer of research-based evidence 1.81 (1.15)

29. Intellectual property rights exist which support researchers who help disseminate research results prior to their publication in journals 2.21 (1.32)

30. There are criteria for evaluation of researchers' knowledge transfer activities in our department 2.58 (1.46)

31. Evidence-based medicine/decision-making is among the subjects in our department 3.44 (1.41)

**Domain 4: Promoting Use: In conducting your research project, which of the following applies to your unit or department or faculty? N=180 (s.d.)**

32. Systematic reviews, or policy briefs or clinical guidelines or technical reports et cetera, that strengthen evidence-based decision-making are produced in my department 2.76 (1.44)

33. Post-graduate student researchers participate in technical committees that help in decision making 1.84 (1.28)

34. We send decision makers reminders to follow the (post-graduate) research results that we have previously sent them. 1.68 (1.14)

35. Education programs such as 'evidence-based medicine' or 'evidence-based decision making' for service providers and/or managers is among the activities in our department 2.84 (1.45)