

**2017 Survey of Research and Research Needs
of Academic Staff of the Faculty of Medical Sciences**

Donald T. Simeon

Professor of Biostatistics and Research

Office of the Dean, Faculty of Medical Sciences

University of The West Indies

St. Augustine, Trinidad & Tobago

March 26, 2018

BACKGROUND

At the request of the Dean, Faculty of Medical Sciences (FMS), University of the West Indies (UWI), St. Augustine, a presentation was prepared and delivered to FMS staff members in January 2017 entitled '*Research at the FMS: Current Status and Future Directions*' (See Appendix). It covered the structures governing research at the FMS, indices of research output and uptake as well as challenges faced and existing/future opportunities. Regarding the way forward, suggestions were proffered regarding approaches to increase research productivity and use. The data presented, and conclusions drawn were based on a desk review that included publications cited in PubMed and FMS reports. Interviews were also conducted with a number of key stakeholders from the FMS and the Ministry of Health, Trinidad & Tobago.

Feedback on the presentation and the recruitment of a Professor of Biostatistics and Research indicated the need for inputs from all staff members to guide the development of a programme to strengthen the research system at the FMS. The goal was to collect data that would guide the roll out of interventions to facilitate an increase in the conduct of quality research as well as its translation into health policies and strengthening health systems.

OBJECTIVES

The objectives of the survey were to collect data from academic staff in order to:

- Determine measures of productivity as well as perceptions related to research in the FMS; and
- Identify their needs for training and other areas for support.

METHODS

Design and Participants

An on-line survey was conducted of all full-time academic staff members of the Faculty of Medical Sciences (FMS) using *SurveyMonkey* during the period April 19 to May 5, 2017. To increase the response rate, the survey was repeated targeting the initial non-respondents during the period August 7-25, 2017.

It was decided to conduct an on-line survey in order to reduce costs even though it was expected to have a lower response rate compared with the employment of a Research

Assistant to make appointments and conduct interviews. The use of the on-line survey also resulted in a much shorter timeframe for the completion of data collection.

Instrument/Measurements

A 25-item questionnaire was designed *de novo* to collect the data required to address the survey objectives. The questionnaire comprised primarily closed questions.

Items included the staff members, sex, post, place of work, their research experience, their views regarding the conduct of research at the FMS, their research training needs and measures of research productivity.

After a short pretest, the questionnaire was uploaded into SurveyMonkey.

Procedure

The email addresses of all full-time academic staff members of the FMS were obtained from the FMS IT Department. Subsequently, emails were sent to the staff members with a link to the questionnaire, which was to be completed on-line. Periodic reminder emails were sent to encourage participation during the study periods.

The use of *SurveyMonkey* as the modality for the conduct of the survey was facilitated by the Campus Office of Planning and Institutional Research (Ms Keren Wilson).

Data Analysis

The Office of Planning and Institutional Research provided the FMS with a 'ready-to-analyse' SPSS file with the data that were collected using the SurveyMonkey software.

The categorical variables were described as frequencies and relative percentages. Quantitative variables were described as Mean (SD), however publications and presentations were described as median and range due to their positively skewed distributions. Sex and School differences for the categorical variables were examined using Chi Squared tests while differences in the publications and presentations were examined using non-parametric tests i.e. Mann-Whitney U and Kruskal-Wallis tests, respectively. Differences in other quantitative variables were examined using t-tests and ANOVA.

The data were analysed using SPSS Version 25.

RESULTS

Response Rate

A total of 118 of the 172 full-time FMS academic staff members responded to the survey. This represented a response rate of 68.6%.

Background Characteristics

The background characteristics of the respondents are presented in **Table. 1**. There were 72 (61%) male and 46 (39%) female respondents.

Schools/Departments

Most were from the School of Medicine (44%) and the School of Veterinary Medicine (25%). There was a significant gender difference by School/Department ($p=0.007$). This was highlighted with 81% of respondents from the Clinical Medical Sciences being male compared with 18% males in the School of Nursing.

Posts

Regarding their posts, the sample comprised mainly Lecturers (49%) and Senior Lecturers (20%). There was also a significant gender difference ($p<0.001$). Notably, males had higher ranked posts than females with 94% of professors being male compared with 0% of Assistant Lecturers (being male).

There was also a significant difference in posts by Schools/Departments ($p<0.001$). As many as 88% of respondents from Basic Health Sciences were either Professors or Senior Lecturers; this compares with 18% in the School of Nursing.

Research Experience

The distribution of research experience among the respondents was bimodal with 42% having more than 10 years of research experience. On the other hand, 30% conducted research for 5 years or less.

Perceived Capability as a Researcher

The academic staff members were asked to rate their capability as a researcher using a 5-point Likert scale ranging from 1 (No capability) to 5 (Expert). Most rated themselves as average or just above average i.e. scores of 3 (42%) or 4 (31%). The mean score was 3.42 (SD=0.91) while the median score was 3.0.

There was a difference in School/Department in staff's perception of their research capability ($p=0.012$). Basic Health Sciences (mean=4.1; SD=0.6) had the highest score, which was significantly higher than Clinical Medical Sciences (mean=3.0; SD=0.8).

Reasons for Conducting Research

The main reasons for conducting research were academic progress (66%), to contribute to science/knowledge (64%), personal interest (57%), to provide evidence to inform health polices, programmes and medical practice (40%) and to improve health services (34%).

Primary Research Interests

Their primary research interests of the respondents were clinical studies (43%), NCDs (32%), family/public health (21%) and laboratory studies (21%). See **Table 1**.

Views Regarding Research at the FMS

The respondents' views regarding various issues related to research at the FMS are presented in **Table 2**.

Research Culture / Value Placed on Research

They were asked to rate the presence of a research culture, including the value placed on research at the FMS using a 5-point Likert scale. The scale ranged from 1 (Absent) to 5 (Outstanding). Most persons scored it as average or just below-average i.e. scores of 3 (43%) and 2 (25%). The mean score was 3.02 (SD=0.94) while the median score was 3.

Main Challenges Encountered

The main challenges encountered in the conduct of research were time (50%), availability of equipment/facilities (29%), funding (22%) and support with data analysis (22%).

How to Strengthen Research

When asked what can be done to strengthen the research at the FMS, 48% of respondents indicated that a research support unit would be an effective strategy. In addition, 25% felt that incentives can be provided. The main incentives identified were having protected time for research (25%) and provision of funding (23%). Mentorship by senior staff at the FMS was also identified as a good strategy by 19% of respondents.

Support for a Research Centre of Excellence

When asked if there was a need for the research at the FMS to revolve around a Centre of Excellence, 65% of respondents agreed. In addition, 25% said that there should not be a single focus but that it should be cross-cutting covering various research areas, 16% felt that it should focus on NCDs and 15% said Public Health (18). See **Table 2**.

Research Training Needs of the FMS Academic Staff

The research training needs of the FMS Academic staff members are presented in **Table 3**.

Almost all the respondents (92%) indicated that they felt that there was a need for staff training in research at the FMS. Similarly, the vast majority of respondents (89%) were willing to attend research skills training workshops hosted by the FMS.

When asked what type of research skills training they would be interested in, respondents were most interested in attending workshops that addressed the use of statistical software (74%), data analysis (64%), grant proposal writing (59%), qualitative research methods (53%), sampling and sample size determination (48%) and writing scientific manuscripts (48%).

Regarding what would be the most appropriate modality to host the training workshops, there was a preference for face-to-face half-day workshop sessions (45%) followed by webinars (23%). See **Table 3**.

Research Productivity

The various measures of research productivity of the FMS Academic staff members are presented in **Table 4** and **Table 5**.

Research Grants

Only half (50%) of the respondents indicated that they received research grants in the last 5 years. This includes 18% who received one grant and 14% with more than 3 grants. Regarding the value of the grants, only 10% received grants of 50 000USD or more. Specifically, nine (8%) staff members received grants of 200 000USD with four (3%) receiving grants of over 1 Million USD. The median number of grants received by the FMS academic staff over the last 5 years was 1.0 with the median value of the grants being 15 877USD with the range being 550USD to 4 Million USD.

The primary sources of research funding for the FMS staff were the UWI Research and Publication Fund (50%) and self (47%).

Planned Outcome of Research

Publications in peer-reviewed journals were the primary planned outcome for research conducted at the FMS (85%). This was followed by improving patient care (64%), providing evidence for health policy development (49%) and presentations at conferences (49%).

Conference Presentations

Regarding presentations at conferences, 34% of the respondents indicated that they delivered at least 5 over the previous 5 years, with 13% delivering at least 10. The median number of presentations over that period was 3.0, with the range being 0 to 48.

There was a gender difference in conference presentations ($p=0.001$). Males (median=4.0) made more presentations than females (median=1.5) in the previous 5 years. There was also a difference by School ($p=0.04$). Clinical Medical Sciences (median=5.0) had the highest rate with the lowest rates being in School of Veterinary Medicine (median=1.0) and Para-Clinical Sciences (median=1.5).

Publication of Abstracts

As seen in **Table 4**, 23% of the respondents published at least 5 abstracts in the previous 5 years while 13% published at least 10. The median number of abstracts published in the previous 5 years was 2.5 while the range was 0 to 40.

There was also a gender difference in the publication of abstracts ($p=0.001$). Males (median=5.0) published more abstracts than females (median=1.0) in the previous 5 years.

Peer-Reviewed Publications

12% of the respondents had no peer-reviewed publications in the previous 5 years. However, 48% had at least 5, 31% had at least 10 and 15% had at least 20 peer-reviewed publications in the previous 5 years. The median number of publications in peer-reviewed journals by FMS staff members over the previous 5 years was 6.0 while the range was 0 to 50.

There was a gender difference in peer-reviewed publications ($p<0.001$). Males (median=9.5) had more publications than females (median=2.0) in the previous 5 years. There was also a difference by School ($p=0.05$). School of Pharmacy (median=15.0) and Basic Health Sciences (median=10.0) had the highest rates with the lowest rate being the School of Nursing (median=1.5).

Non-Peer-Reviewed Publications

22% of the respondents had no non-peer-reviewed publications with 4% having 5 or more in the previous 5 years. The median number of non-peer-reviewed publications by FMS staff members over the previous 5 years was 1.0 while the range was 0 to 8.

Publication Goals/Expectations

Three-quarters (76%) of the respondents felt that researchers at the FMS should publish at least 2 papers per year. The median was 2.0 publications per year while the range was 0.5 (1 every 2 years) to 15 per year. On the other hand, they felt that world-class researchers should publish a median was 4.0 publications per year with the range being 1 to 20 publications per year. See **Table 4** and **Table 5**.

HIGHLIGHTS/IMPLICATIONS

The highlights of the findings of the academic staff survey include:

- **Research experience:** 42% of respondents had over 10 years of experience while 33% had 5 years or fewer. This indicates that there is great potential for the more experienced staff members to work with and mentor those with limited experience.
- **Research grants:** The respondents received on average one grant over the previous 5 years with an average value of 16 000USD. Notably, less than 10% of respondents received grants from international research funding agencies in the previous 5 years. This is inadequate and points to a need for greater grant writing skills in order to be able to compete for grant funding internationally.
- **Publications:** The respondents averaged 1.2 peer-reviewed publications per year, while they felt that FMS researchers should average 2 per year and 'world-class' researchers should average 4 per year. This is remarkable. Not only did they indicate that the output from FMS researchers should be half of what they think world-class researchers should produce, they were still not achieving their defined FMS goal. [It is also notable that the majority identified peer-reviewed publications as the main outcome of their research.] This is surely an area for urgent attention.
- **Research challenges:** Regarding the value placed on research at the FMS, respondents assigned an average score. In addition, 50% indicated that time was a major challenge to their research efforts. Notwithstanding, 48% identified the establishment of a research support unit as the most effective strategy to strengthen research at the FMS. In addition, 25% said that there should be protected time for research. Strategies are needed to address these challenges and strengthen the research culture at the FMS.

- **Training needs:** Almost all the respondents indicated that there was a need for research skills training and that they were willing to attend. The areas of greatest need were data analysis using SPSS and grant proposal writing. There is a need for a structured research capacity development programme for FMS staff.
- **Research Centre of Excellence:** There was support for the establishment of a Research Centre at the FMS. There was no overwhelming preference for a single focus of the Centre, implying that it should be as inclusive as possible. The proposed Caribbean Centre for Health Policy and Systems Research would serve this purpose, especially since the majority of academic staff members had indicated that primary outcomes of their research are to inform health policy and strengthen health systems.
- **Gender differences:** There was a gender imbalance among the Schools with 81% of the respondents from the Clinical Medical Sciences being male compared 18% from the School of Nursing. Males also had higher ranked posts than females with 94% of professors being male compared with 0% of Assistant Lecturers (being male). This may be the reason for higher rates of peer-reviewed publications, abstracts and conference presentations among males compared with females.
- **School differences:** The distribution of high ranked posts varied among the Schools. This was highlighted with 88% of respondents from Basic Health Sciences being at the level of Professor or Senior Lecturer compared with only 18% of the School of Nursing. This is likely to be a reason for the difference in publication rate among the Schools.

LIMITATIONS

The main limitations of the survey include:

- **Response rate:** The response rate of 69% was lower than what was targeted. However, for this type of on-line survey of academics, such a rate is very acceptable. Importantly though, one has to assume that the non-respondents were similar to those who responded. There is no reason to believe otherwise.
There was also a number of variables with missing data such as non-peer reviewed publications and abstracts in the last 5 years. This further reduced the response rate for these variables.
- The quantitative measures of research productivity were important outcome variables for the survey, however no attempt was made to validate the reports of the staff members. This was beyond the scope of the survey.

NEXT STEPS

The survey achieved its objective of determining the situation (2017) at the FMS regarding the status of research. This includes research productivity across its Schools as well as the challenges faced and the training needs. It also produced critical quantitative measures of performance such as publications and research grants. These can serve as a baseline to facilitate future evaluations of research strengthening interventions that may be implemented.

While specific interventions can be implemented to address the needs articulated by the FMS academic staff members, it is likely that a holistic approach to strengthening the research system at the FMS would be more effective. The Caribbean Centre for Health Policy and Systems Research is an ideal facility through which research strengthening strategies can be designed and implemented. The Centre can develop and lead a well-planned research system development program. It would include capacity development for academic staff with measurable indicators of success at both the process and outcome levels. The Centre can also be the hub that coordinates a research support system, which would be needed to complement the training workshops. Regarding the latter, in addition to training in data analysis, it is important to address issues such as grant writing and the preparation of manuscripts for publication.

While overall, the goal is to improve the research culture of the FMS, it is expected that more focus should be placed on the Schools that have the greatest needs.

Table 1. Background Characteristics of FMS Academic Staff Members

| Variables | No. (%) [n=118] | |
|---|-----------------------------|-------|
| Sex | | |
| Male | 72 | (61%) |
| Female | 46 | (39%) |
| Place of Work | | |
| School of Medicine | 52 | (44%) |
| <i>Clinical Medical Sciences</i> | 31 | (26%) |
| <i>Para-clinical Sciences</i> | 13 | (11%) |
| <i>Basic Health Sciences</i> | 8 | (7%) |
| School of Veterinary Medicine | 29 | (25%) |
| School of Dentistry | 13 | (11%) |
| School of Nursing | 11 | (9%) |
| CMSE/Library/Dean's Office | 7 | (6%) |
| School of Pharmacy | 6 | (5%) |
| Post | | |
| Lecturer | 58 | (49%) |
| Senior Lecturer | 23 | (20%) |
| Professor | 16 | (14%) |
| Assistant Lecturer | 7 | (6%) |
| Clinical Instructor | 5 | (4%) |
| Other | 9 | (8%) |
| How long conducting research | | |
| Never | 3 | (3%) |
| 1-5 years | 35 | (30%) |
| 6-10 years | 20 | (17%) |
| >10 years | 49 | (42%) |
| No Response | 11 | (9%) |
| Perceived capability as a researcher | | |
| 1- No Capability | 2 | (2%) |
| 2 | 13 | (11%) |
| 3 – Average | 49 | (42%) |
| 4 | 37 | (31%) |
| 5 - Expert Capability | 14 | (12%) |
| No Response | 3 | (3%) |

Table 1 (continued). Background Characteristics of FMS Academic Staff Members

| Variables | No. (%) [n=118] | |
|---|---------------------|-------|
| Why conduct research | | |
| Academic Progress | 78 | (66%) |
| Contribute to science/Generate new knowledge | 75 | (64%) |
| Personal Interest | 67 | (57%) |
| Evidence to guide policies/programmes/ practice | 47 | (40%) |
| Improve Services | 40 | (34%) |
| Priority of FMS | 22 | (19%) |
| Encouragement for colleagues/mentors | 13 | (11%) |
| Other | 5 | (4%) |
| Primary research interests | | |
| Clinical studies | 51 | (43%) |
| Non-Communicable Diseases | 38 | (32%) |
| Family/Public Health | 25 | (21%) |
| Laboratory studies | 25 | (21%) |
| Epidemiology/Population Studies | 23 | (19%) |
| Communicable Diseases | 17 | (14%) |
| Mental Health | 15 | (13%) |
| Pharmacy / Pharmacology | 11 | (9%) |
| Animal studies | 8 | (7%) |
| Others | 15 | (13%) |

Table 2. Views Regarding Research at the Faculty of Medical Sciences

| Variable | No. (%) [n=118] |
|--|-----------------------------|
| Presence of a research culture / Value placed on research | |
| 1 – Absent | 4 (3%) |
| 2 | 30 (25%) |
| 3 - Average | 51 (43%) |
| 4 | 24 (20%) |
| 5 – Outstanding | 8 (7%) |
| No Response | 1 (1%) |
| Challenges faced | |
| Time | 59 (50%) |
| Equipment/facilities | 34 (29%) |
| Funding | 26 (22%) |
| Support with data analysis | 26 (22%) |
| Data collection | 14 (12%) |
| Other | 14 (12%) |
| How to strengthen research at the FMS | |
| Establishing a Research Support Unit | 57 (48%) |
| Offering Incentives | 30 (25%) |
| <i>Protected Time for Research</i> | 29 (25%) |
| <i>Funding</i> | 27 (23%) |
| <i>Awards/Prizes</i> | 10 (8%) |
| Mentorship by Senior Researchers on staff | 23 (19%) |
| Hosting Research Conferences | 13 (11%) |
| Hosting Departmental Journal Clubs | 10 (8%) |
| Other | 3 (3%) |
| Support for a Research Centre of Excellence at the FMS | |
| Yes | 77 (65%) |
| No | 35 (30%) |
| No Response | 6 (5%) |
| Suggested focus of the Centre | |
| No One Specific Area | 30 (25%) |
| Lifestyle-related NCDs | 19 (16%) |
| Public Health | 18 (15%) |
| Knowledge Management, including Innovations | 14 (12%) |
| Infectious Diseases | 10 (8%) |
| Surgery | 8 (7%) |
| Natural Products and Herbal Medicine | 7 (6%) |
| Mental Health | 7 (6%) |

Table 3. Research Training Needs of Academic Staff Members

| Variables | No. (%) [n=118] |
|---|-----------------------------------|
| Need for training | |
| Yes | 109 (92%) |
| No | 7 (6%) |
| No Response | 2 (2%) |
| Willing to attend training workshops | |
| Yes | 105 (89%) |
| No | 13 (11%) |
| Type of workshops needed | |
| Use of statistical software e.g. SPSS | 87 (74%) |
| Data analysis | 75 (64%) |
| Grant proposal writing | 69 (59%) |
| Qualitative research methods | 62 (53%) |
| Sampling/sample size determination | 57 (48%) |
| Writing manuscripts/scientific papers | 56 (48%) |
| Quantitative research methods | 48 (41%) |
| Data collection tools e.g. questionnaires | 40 (34%) |
| Research Ethics | 30 (25%) |
| Other | 8 (7%) |
| Most appropriate modality | |
| Face-to-face half-day sessions | 53 (45%) |
| Webinars | 27 (23%) |
| Face-to-face whole-day sessions | 18 (15%) |
| Other | 6 (5%) |
| No Response | 14 (12%) |

Table 4. Measures of Research Productivity

| Variables | No. (%) [n=118] |
|--|-----------------------------|
| Number of research grants in last 5 years | |
| 0 | 37 (31%) |
| 1 | 21 (18%) |
| 2 | 21 (18%) |
| > 3 | 17 (14%) |
| No Response | 22 (19%) |
| Total value of these grants | |
| \$0 to \$10 000 | 15 (13%) |
| \$10 000 to \$20 000 | 14 (12%) |
| \$20 000 to \$50 000 | 11 (9%) |
| > \$50 000 | 12 (10%) |
| No Response | 66 (56%) |
| Primary source of funding | |
| UWI Research and Publications Fund | 59 (50%) |
| Self | 55 (47%) |
| Other UWI funds | 11 (9%) |
| T&T Government | 7 (6%) |
| US Government agencies e.g. NIH | 5 (4%) |
| Other | 12 (10%) |
| Planned outcome of research | |
| Peer-reviewed Publications | 100 (85%) |
| Improve Patient Care | 75 (64%) |
| Impact on Health Policy | 58 (49%) |
| Presentations at Meetings/Conferences | 58 (49%) |
| Non-Peer-reviewed Publications | 12 (10%) |
| Other | 3 (3%) |
| Number of research conference presentations in the last 5 years | |
| 0 | 28 (24%) |
| 1 to 4 | 39 (33%) |
| 5 to 9 | 25 (21%) |
| 10 or more | 15 (13%) |
| No Response | 11 (9%) |
| Number of published abstracts in the last 5 years | |
| 0 | 17 (14%) |
| 1 to 4 | 22 (19%) |
| 5 to 9 | 12 (10.2%) |
| 10 or more | 15 (13%) |
| No Response | 52 (44%) |

Table 4 (Continued). Measures of Research Productivity

| Variables | No. (%) [n=118] |
|--|-----------------------------|
| Number of peer-reviewed publication in the last 5 years | |
| 0 | 14 (12%) |
| 1 to 4 | 31 (26%) |
| 5 to 9 | 19 (16%) |
| 10 to 19 | 19 (16%) |
| 20 or more | 18 (15%) |
| No Response | 17 (14%) |
| Number of non-peer-reviewed publication in the last 5 years | |
| 0 | 26 (22%) |
| 1 to 4 | 27 (23%) |
| 5 to 9 | 5 (4%) |
| No Response | 60 (51%) |
| Number of publications per year should be goal for FMS researcher | |
| 1 | 18 (15%) |
| 2 | 44 (37%) |
| 3 to 4 | 35 (30%) |
| 5 or more | 11 (9%) |
| No Response | 10 (9%) |
| Number of publications per year should be goal for world-class researcher | |
| 1 | 6 (5%) |
| 2 | 23 (20%) |
| 3 to 4 | 38 (32%) |
| 5 or more | 41 (35%) |
| No Response | 10 (9%) |

Table 5. Measures for Research Productivity (Averages)

| Variable | n= | Median | Minimum | Maximum | Mean | SD |
|---|-----|--------|---------|-----------|---------|---------|
| No. of grants in the last 5 years | 96 | 1.0 | 0 | 7 | 1.4 | 1.5 |
| Total value of these grants (USD) | 52 | 15 877 | 550 | 4 000 000 | 204 965 | 618 445 |
| Number of research conference presentations in the last 5 years | 107 | 3.0 | 0.0 | 48.0 | 4.89 | 7.1 |
| Number of published abstracts in the last 5 years | 66 | 2.5 | 0.0 | 40.0 | 6.32 | 8.5 |
| Number of peer-reviewed publication in the last 5 years | 101 | 6.0 | 0.0 | 50.0 | 9.53 | 10.8 |
| Number of non-peer-reviewed publication in the last 5 years | 58 | 1.0 | 0.0 | 8.0 | 1.57 | 1.96 |
| Number of publications per year that should be the goal for FMS researcher | 108 | 2.0 | 0.5 | 15.0 | 2.73 | 1.86 |
| Number of publications per year that should be the goal for world-class researcher | 108 | 4.0 | 1.0 | 20.0 | 4.35 | 2.98 |