Changing the Research Culture at the Section of Psychiatry, The University of the West Indies, Mona

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ABSTRACT

Objective: *To compare the medical research output of the Section of Psychiatry, The University of the West Indies (UWI), Mona, before and after the implementation of strategies aimed at stimulating research.*

Method: *Specific strategies such as weekly research and journal club meetings, with an emphasis on team activities and the establishment of bi-annual targets for submission of research papers were instituted in 2000. All research outputs from the Section of Psychiatry over the period 1995 to 2005 were identified from the Departmental Reports of the University of the West Indies and the published abstracts of the UWI Faculty of Medical Sciences and the Caribbean Health Research Council annual research conferences. A number of variables were extracted from each paper and comparisons made between the five-year period before and the five-year period after the implementation of the research enhancing strategies. Statistical analyses were performed with the Statistical Package for the Social Sciences (SPSS; version 11.5) and included chi-squared and Mann Whitney U tests.*

Results: *One-hundred and sixty-two items of research output were identified for the entire period under study. In the period after the implementation of the research enhancing strategies, there were significant increases in the total research output (*$p = 0.008$*) and refereed publications (*$p = 0.016$*).*

Conclusions: *There were considerable increases in the overall research output of the department as well as in many sub-categories of output. These strategies are presented as a model to other departments seeking to augment their output of research.*

Cambiando la Cultura de la Investigación en el Departamento de Psiquiatría de la Universidad de West Indies, Mona

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RESUMEN

Objetivo: *Comparar la producción médico-investigativa del Departamento de Psiquiatría de la Universidad de West Indies (UWI), Mona, antes y después de la implementación de las estrategias encaminadas a estimular la investigación.*

Método: *En el año 200, se instituyeron estrategias específicas, tales como reuniones semanales del club de investigación y publicaciones, con énfasis en las actividades en equipo y el establecimiento de objetivos semestrales para la presentación de trabajos de investigación. Todas las producciones investigativas del Departamento de Psiquiatría durante el periodo de 1995 al 2005, fueron identificadas a partir de los informes Departamentales de la Universidad de West Indies y los resúmenes publicados por las conferencias anuales de la Facultad de Ciencias Médicas de UWI y el Consejo Caribeño de Investigaciones de la Salud. Se extrajeron un número de variables de cada trabajo y se hicieron comparaciones entre el quinquenio anterior y el posterior a la implementación de las estrategias del perfeccionamiento de las investigaciones. Se realizaron análisis estadísticos con el Paquete Estadístico para las Ciencias Sociales (SPSS; versión 11.5) y se incluyeron pruebas U de Mann-Whitney y Chi-cuadrado.*

Resultados: *Se identificaron ciento sesenta y dos ítems de output investigativo para todo el periodo en estudio. En el periodo posterior a la implementación de las estrategias de perfeccionamiento de las*

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*investigaciones, hubo aumentos significativos en la producción investigativa total (*p = *0.008) y en las publicaciones referenciadas (*p = *0.016).*

Conclusiones: *Hubo aumentos considerables en la producción investigativa general del departamento, así como en muchas subcategorías de producción. Estas estrategias se presentan como un modelo para otros departamentos que buscan aumentar su producción investigativa.*

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INTRODUCTION

The research output of academic departments in medical faculties has been a concern internationally (1–3) and The University of the West Indies (UWI) has been grappling with the issue for some time now. Hickling (4) drew attention to the decreasing output of peer-reviewed publications in the Faculty at Medical Sciences at the Mona campus of the UWI between 1960 and 1990. He identified that the Section of Psychiatry at UWI, Mona, had produced zero peer reviewed publications in the sentinel years of 1979 and 1990. Figueroa and Henry-Lee (5) noted that the Tropical Metabolism Research Unit (TMRU) at UWI (Mona) was the leading producer of health research in Jamaica followed by two private organizations and then by the rest of the medical faculty at UWI, Mona. What factors make certain units or departments successful research producers and others not?

Bland and colleagues (6, 7) report that individual, institutional and leadership factors are all correlated with research productivity. Length of time since medical school graduation and age are two individual factors which have been explored. Ferrer and Katerndahl (1) showed that research productivity declined with time since graduation but, in seeming contradiction, Manu *et al* (8) showed that younger faculty members tend to have lower publication rates. Research training appears to be associated with higher research output (1) and it has been shown that women with children are less likely to produce research than their peers (3). It has also been suggested that a lack of understanding of the influence of research output on career advancement and a lack of protected research time may be barriers to research output (9). At the institutional level, funding and staff size have been reported as being positively associated with research output (10). Departmental leadership with a vision that is clear and consistent with faculty objectives may tend to foster research as may the provision by the leadership of incentives, mentorship, support and opportunities for learning (11).

The identification of responsible leadership and working in teams are well established principles of management for the success of any productive venture (12, 13). Other important concepts are working towards specific targets (14) and having regular and consistent opportunities for strategizing and feed back, *eg* regular meetings (15). Some of these principles have in fact been implemented in the Section of Psychiatry at the UWI and have been the subject of a study (16) which showed that the section's research output increased two years after the appointment of its first Professor of Psychiatry in twenty-five years, and his introduction of the other strategies.

Former Pro-Vice Chancellor and Mona Campus Principal Professor KO Hall suggested (17) that one of the new challenges in the Caribbean for the current millennium is the "… emergence of a knowledge-based economy which is characterized by the need to discover, apply and disseminate new knowledge through research and development". Thus engendering a research culture in The University of the West Indies has become a major priority. It was in this context that the research enhancing strategies in the Section of Psychiatry, UWI, Mona, were implemented. This paper tests the hypothesis that the introduction of responsible leadership and the introduction of new management strategies will significantly change research productivity output.

METHODS

a) The Model

The new research vision and its associated change mechanisms reflected the imposition of a university policy rather than a process that was collectively nurtured by existing staff. The policy was to employ the appropriate leadership to formulate and execute strategies aimed at bringing about the needed change in research output. The development of the strategies was driven by the management literature and by the past experiences of the new leadership. The change mechanisms fell mostly into the categories of institutional and leadership factors. Staff were immersed in the practice of both the management by objectives (MBO) and result oriented management (ROM) paradigms. Having clearly articulated research as a major priority, specific related objectives were determined by strategic planning meetings at the Section level and under the guidance of the university's policies.

There was the initiation of weekly journal club meetings in which postgraduate students (psychology students and psychiatry residents) critiqued recent journal articles under the supervision of academic staff. The articles selected were from a predetermined schedule of scholarly journals. A weekly research meeting for all postgraduate students and academic staff/consultants was also established. At these meetings, research ideas were proposed and discussed by participants. Support and direction were offered by all participants according to their experience and expertise. Persons were conscripted into viable research projects based on their own interest and/or on the recommendations of academic staff.

The establishment of research databases for all clinical service activities provided by the Section was instituted and mandatory involvement in research activities for all postgraduate students was established. A team approach to research was also encouraged through the establishment of research teams and drivers who were responsible for ensuring that project-specific targets were met. These targets, *eg* proposal writing and conference submission, were set on an ongoing basis via the consensus of the participants. Progress reports were provided at each meeting and whenever written documents related to a research project were being prepared, successive drafts were reviewed and critiqued by all present at the meeting.

The Faculty of Medical Sciences Annual Research Conference (FMSARC) at UWI (Mona) and the annual Caribbean Health Research Conference (CHRC) were established as bi-annual targets for submission of research articles. Thus, several papers had the same deadline for submission to conferences. A large GANTT chart provided a visual representation of the progress of all research projects being discussed at the meetings. This was intended to keep researchers motivated and on target. In this instance, the leadership role of motivation was being mediated through one of the newly implemented institutional mechanisms. Similarly, the leadership provided learning opportunities, support and mentorship through the regular meetings and other institutional strategies. Both the journal club and research meetings became firmly institutionalized and were held every week of the calendar year with the exception of public holidays. Most research meetings were chaired by the professor of psychiatry.

The university's policy of requiring at least two publications per year as a pre-requisite for the renewal of employment contracts was frequently raised with the academic staff. They, however, exhibited some resistance to the implemented strategies. For some staff members, attendance at research meetings was low and irregular. Whereas the meetings were compulsory for postgraduate students, university policy did not allow for making the meetings compulsory to staff.

Protected research time and infusions of university funding were not part of the model which was implemented.

b) Data collection and analysis

The Section of Psychiatry's annual reports to the University of the West Indies were reviewed for the academic years 1995–1996 through 2004–2005 (18–27). All published and presented research was identified and extracted; research in progress was not included in this study. All published abstracts of the FMSARC (28–33) and CHRC (34–43) for the same period were also reviewed for presentations made by members of the Section of Psychiatry. Care was taken to avoid duplication of data from the different sources.

Variables identified for extraction were academic year, type of output (publication or presentation and the various subcategories of each, *eg* technical report, book chapter, poster presentation), authors, number of authors, and forum for output (*eg* CHRC). Comparisons of the annual averages of research output (total and subcategories) from the periods before and after the implementation of the special strategies (academic years ending 1996–2000 and 2001–2005 respectively) were made using the Mann Whitney U test. Explorations of changes in ratios and proportions over time were conducted using the chi-squared test.

Some possibly confounding variables were also explored in order to determine the extent to which they may have been responsible for any changes in observed research output. Age, gender and number of staff members were extracted from departmental reports and records, and compared for the periods before and after the implementation of the special strategies using the Mann Whitney U and chi-squared tests as appropriate.

All statistical analyses were performed with the Statistical Package for the Social Sciences (SPSS) version 11.5. Statistical significance was taken at the 5% level.

RESULTS

There were 156 items of research output over the 10-year period of academic years ending 1996 to 2005; 74.4% of research output were presentations and 25.6% publications of one type or another. Comparing the period of academic years ending1996–2000 with the period of academic years ending 2001–2005, there was an increase in total output from 10 to 146 (Table 1). This represents a change in mean annual output from 2.0 to 29.2; an increase of 1360%.

Table 1: Category of research output by academic year

Academic Year ending	Presentation	Publication	Total Output	Presentation: Publication ratio
1996	0	0	0	
1997	0	0	0	
1998	0	2	2	
1999	0	3	3	
2000	5*	0	5	
Subtotal (1996–2000)	5	5	10	1.0
2001	17 (†17)	2	19	8.5
2002	17 (†12)	4	21	4.2
2003	22 (†16)	3	25	7.3
2004	21 (†11)	6	27	3.5
2005	34 (†18)	20	54	1.7
Subtotal (2001–2005)	111 (†74)	35	146	3.2
Total (1996–2005)	116	40	156	2.9

Chi-square (χ^2) for presentations versus publications according to academic year: 25.26, df = 7, p = 0.001

*Types of presentations unspecified

†Oral presentations, the rest were posters. Chi-square (χ^2) for oral versus poster presentations according to academic year: 13.79, df = 4, p = 0.008

The difference in the average annual research output between these two periods was statistically significant (p = 0.008) as were increases in the average number of conference presentations (0.008), and in the average number of refereed publications (p = 0.016). There were no demonstrable differences in the average number of books and monographs, book chapters, technical reports or workshops produced (p > 0.05 for each of these categories). All comparisons were made with the non-parametric Mann Whitney U test (Table 2).

Similar analyses showed no demonstrable difference in average annual research output between academic years ending 2001–2003 and 2004–2005 (p > 0.05); neither was there any significant change when research output categories were considered separately (p > 0.05 for all categories) (Table 2).

Chi-squared analysis showed significant changes in the relative proportions of publications and presentations over all years (χ^2 = 25.26, df = 7, p = 0.001, Table 1). From academic years ending 1996–2000, the total research output was small (ten items) and in any given year in that period all research output was either a presentation or a publication, or there was no research output at all. Since then, there has been a steady increase in the proportion of publications compared with presentations as reflected in a decline in the Presentation: Publication ratio from 8.5:1 in 2000–2001 to 1.7:1 in 2004–2005 (Table 1). For 2000–2001 through 2004–2005, there has been a significant decrease in the proportion of oral presentations compared with poster presentations (χ^2 = 13.79, df = 4, p = 0.008) (Table 2).

The fora for conference presentations have also exhibited significant changes with national conferences (other than the FMSARC) showing an overall decline and CHRC presentations showing an increase in 2000–2001 and 2001–2002 with a subsequent decline. The FMS and international conferences other than the CHRC have shown fluctuations but no definite directions of change (χ^2 = 30.55, df = 15, p = 0.01) (Table 3). All or most output before 1999–2000 was by group effort. This changed in 1999–2000 with most output being authored by individuals. Since then, there has been a decline in single authorship and a steady and significant increase in research output produced by pairs or teams (χ^2 = 22.87, df = 7, p = 0.002) (Table 4).

Table 3: Fora for conference presentations by academic year

Academic Year ending*	FMSARC n (%)	CHRC n (%)	Other International n (%)	Other local n (%)	Total n (%)
2000	1 (20.0)	0	2 (40.0)	2 (40.0)	5 (100.0)
2001	1 (5.9)	2 (11.8)	7 (41.2)	7 (41.2)	17 (100.0)
2002	5 (29.4)	5 (29.4)	3 (17.6)	4 (23.5)	17 (100.0)
2003	8 (36.4)	8 (36.4)	6 (27.3)	0 (0.0)	22 (100.0)
2004	9 (42.9)	5 (23.8)	4 (19.0)	3 (14.3)	21 (100.0)
2005	16 (47.1)	3 (8.8)	12 (35.3)	3 (8.8)	34 (100.0)
Total	**40 (34.5)**	**23 (19.8)**	**34 (29.3)**	**19 (16.4)**	**116 (100.0)**

Chi-square (χ^2) = 30.55, df = 5, p = 0.010

*There were no conference presentations for 1996–1999

The exploration of potential confounders showed that there were no significant changes in age or gender over the periods compared. There was, however, a significant increase in the number of staff for the period of academic years ending 2001-2005 compared with 1996–2000 (Table 5). The mean annual number of staff for the two periods were 3.2 and 5.2 respectively. This represents an increase of 62.5%.

Table 2: Mann-Whitney U tests comparing average annual outputs

Category of research output	Comparing academic years ending 1996–2000 with 2001–2005					Comparing academic years ending 2001–2003 with 2004–2005				
	1996–2000		2001–2005		p-value	2001–2003		2004–2005		p-value
	Median	IQR*	Median	IQR*		Median	IQR*	Median	IQR*	
Conference presentations†	0.0	2.5	19.0	10.5	0.008	17.0	5.0	26.0	14.0	0.400
Peer reviewed publication	0.0	1.0	3.0	2.5	0.016	2.0	2.0	4.0	1.0	0.200
Book/monograph	0.0	0.0	0.0	1.5	0.310	0.0	0.0	1.5	1.0	0.200
Book chapter	0.0	1.0	1.0	5.5	0.421	1.0	1.0	5.0	10.0	0.800
Technical report	0.0	0.5	1.0	2.5	0.222	0.0	1.0	2.5	1.0	0.200
Workshop	0.0	0.0	1.0	1.5	0.151	0.0	1.0	1.5	1.0	0.200
Total	**0.0**	**4.0**	**25.0**	**20.5**	**0.008**	**21.0**	**6.0**	**40.5**	**27.0**	**0.200**

*IQR = Inter-quartile range.

†Oral and poster presentations were analysed together since they were unspecified for academic years ending 1996–2000.

DISCUSSION

A considerable increase in the research output of the Section of Psychiatry has been observed since the implementation of specific strategies for achieving this objective in 2000. The

Table 4: Number of authors of research output by academic year

Academic year ending	Single author n (%)	Two or more authors n (%)	Total n (%)
1996	0	0	
1997	0	0	
1998	0 (0.0)	2 (100.0)	2 (100.0)
1999	1 (33.3)	2 (66.7)	3 (100.0)
2000	5 (100.0)	0 (0.0)	5 (100.0)
2001	15 (78.9)	4 (21.1)	19 (100.0)
2002	9 (42.9)	12 (57.1)	21 (100.0)
2003	9 (36.0)	16 (64.0)	25 (100.0)
2004	8 (29.6)	19 (70.4)	27 (100.0)
2005	18 (33.3)	36 (66.7)	54 (100.0)
Total	**65 (41.7)**	**91 (58.3)**	**156 (100.0)**

Chi-square (χ^2) = 22.87, df = 7, p = 0.002

Table 5: Exploration of possible confounding variables

Academic year ending	Mean age of academic staff	Number of academic staff	M:F ratio of academic staff
1996	51.7	3	2:1
1997	52.7	3	2:1
1998	53.7	3	2:1
1999	54.7	3	2:1
2000	54.5	4	1:1
2001	57.8	4	3:1
2002	46.2	6	1:1
2003	45.5	4	1:1
2004	44.5	6	1:1
2005	45.5	6	1:1
p value	0.116*	0.010*	0.997†

* Comparing academic years ending 1996–2000 with 2001–2005 using Mann-Whitney U.

†Comparing academic years ending 1996–2000 with 2001–2005 using the chi-squared test on raw values for males and females.

Mann Whitney U analyses (academic years ending 1996–2000 *versus* academic years ending 2001–2005) of overall, conference, and peer reviewed published research output clearly demonstrate this. It is interesting that no statistically significant increases in all outputs were observed comparing the period of academic years ending 2001–2003 with the period of academic years ending 2004–2005. This is despite the steady increase in total publication output from 19 in 2000–2001 to 54 in 2004–2005 and may reflect the limitations of a small sample size for demonstrating statistically significant changes. It is also worth noting that the research output categories in which the increases in output were most apparent were conference presentations and peer reviewed publications. This is reflective of the bias at UWI in favour of these types of research output. Even today, some publication categories included in the analysis, *eg* technical reports, are not officially recognized as research output by the UWI.

It would appear that the leadership and institutional strategies were successful in achieving the objective of increasing research output. The possible role of confounding factors must, however, also be considered. It is possible that the increase in number of academic staff subsequent to the initiation of the change strategies may have contributed to the observed increase in research output. It should be borne in mind, however, that the increase in staff was coincident with an increase in teaching responsibilities as two new postgraduate programmes were started in the section after 2000. The increase in academic staff did not therefore automatically translate into an increase in research time. Also, whereas the mean annual number of staff had increased by 62.5% in the period after the implementation of the change strategies, the mean annual research output had increased by 1360%, twenty times more than the increase in staff members. It is therefore unlikely that any change in number of staff could, by itself, be a major determinant of the increase in research output.

Age and gender of staff were shown by the analyses performed not to have been significantly different between the two periods compared and therefore would not have affected the research output. Other common determinants of research output were also insignificant. There had been no change in research training, infusions of funding or protected research time in the model which was employed. It is worth noting, however, that the foundation provided by the change strategies may have eventually produced more research time and more funding as some of the research projects which were produced after the new strategies were implemented did attract external funding and this also allowed the employment of research assistants thus freeing up research time. The extent to which the increase in research output may have been related to wider faculty or university secular trends cannot be ascertained from the data utilized in this study and is worth exploring in the future.

The implementation of frequent and regular research and journal club meetings, the actualization of working in teams (as demonstrated in Table 4), the setting of objectives and goals, and the possibility of learning through doing all had students and staff immersed in a new culture of research. There existed the opportunity as well as a structured system of support for becoming involved in research projects. Clues about the extent of the new research culture and the degree to which it may have been internalized by members of the section may be present in the analysis of fora for conference presentations. The fact that the FMSARC and international conferences other than the CHRC have become pillars of the Section's conference presentations despite the emphasis placed by the Section on CHRC presentations is certainly interesting. The trend is perhaps indicative of a certain degree of selectivity on the part of authors who began to regard international conferences other than the CHRC as more prestigious given their wider audience. If this theory is correct, not only had research output increased, but members of the

section were also becoming quite savvy with the politics of research.

Apart from important leadership components such as support and motivation, a coercive element may also have contributed to the increased research output. The leadership's frequent reminders to staff about the need to publish in order to maintain their employment would have been a strong motivator to increase research output. This, in fact, may be the reason for the increasing prominence of publications as compared with conference presentations as time progressed. It is also a good example of the congruence between university and department policy which has been identified (11) as crucial for research productivity.

One can only speculate on the causes of the observed resistance to the change strategies by some of the academic staff. Their irregular participation at research meetings is one example of this. Interestingly, at least one parallel research meeting was initiated by a staff-member who had stopped attending the section's official research meetings. This second manifestation of resistance represents a rejection of the official section strategies but an acceptance of the overall vision of research as a priority. Resistance is a well recognized concept in the change management literature (44, 45). Trader-Leigh (45) notes that understanding the underlying factors of resistance results in more favourable outcomes. Resistance, then, may be one of the weaknesses of the change model and could be ameliorated by attempting to understand its roots and complexities, and adjusting management strategies accordingly.

Despite the challenge to the implementation of the change model posed by elements of resistance, the new strategies have been associated with remarkable success. The only plausible alternative explanation for the phenomenal increase in research output is the increase in the number of academic staff. However, with the increased teaching responsibilities of the staff and the percentage increase in research output 20 times greater than the percentage increase in staff, the role of this factor as a significant determinant of the increased research output is quite doubtful. Clearly, the change model has yielded significant benefits and its application should be encouraged in other sections and departments seeking to increase their research output.

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