

A DECADE INTO THE 21ST CENTURY: NIGERIAN WOMEN SCIENTISTS AND ENGINEERS HIGHLY UNDER-REPRESENTED IN ACADEMIA

Uchenna UDEANI
University of Lagos

Charity EJKEME
Federal College of Education (Technical)

Abstract

During the last few decades, attention has been devoted to women in science and technology for sustainable development. This has been the subject of debates, seminars and round tables. In a land mark report titled Women in Higher Education Management published in 1993 by UNESCO, it was noted that with hardly any exception, the global picture is one of men out numbering women at about five to one at middle management level and at about twenty to one at senior management level. Nearly two decades later, this observation remains the same especially in science and technology faculties as evidenced in this descriptive survey of the University of Lagos, Nigeria. Data was generated from the Academic Planning Unit of the university and from an open ended questionnaire distributed to both male and female Science and Technology Faculty. The researchers examined the number of female academics in relation to their male counterparts with respect to number, status and progression over a ten year period (1999-2009). The findings showed that females were under-represented; occupy the middle and lower status; but showed consistent progression over the period. Male and female academia were in agreement on the recommendations for a way forward such as institutionalizing affirmative action, promotion of deserving females into higher academic and administrative positions, provision of scholarships and other incentives for females, encouraging female role models and mentors programmes for young females in academia, as well as increasing participation of young girls in Science and Technology at secondary and tertiary levels of education. The paper concludes that only when gender equity has been achieved in higher education can we evaluate and appreciate the contributions of women scientists and engineers.

Keywords: Women scientist, Women Engineers, gender inequality, higher education employment

Introduction

A World Bank (2002) report on Nigerian Universities revealed that women form a minority of university teachers in Nigeria. The report further showed that female academic staff has stagnated at a level of about 14 percent. Such under representation produces two negative consequences for the university system. First, it deprives universities of access to some of the country's best minds for teaching and research and second, it undercuts the academic performance of female students through the limited provision of female role models who may be more appreciative of the special challenges faced by women on campus. Also the study report confirms differences in fields of study, with women under represented in engineering, science and technology and more likely than men to be found studying health education or the humanities. The general belief is that science, engineering, and technology are tough for women.

Socio-cultural reasons also account for the low numbers of women in S&T and this also transforms into the academia. This paper focused on assessing the number of female academics in relation to their male colleagues in S&T faculties. Specifically the study did the following:

- ascertained the number and status of female academics in relation to their male colleagues in S&T Faculties
- ascertain the percentage growth rate
- appraise the reasons given by both male and female academics for the low numbers of female in S&T faculties.
- appraise the suggestions proffered by both male and female academics for the improvement of female representation in S&T faculties

Methodology

The data for the study was sourced from the statistics unit of the Academic Planning Unit of the University of Lagos, Nigeria and also the National Bureau of Statistics (2007) Annual Abstract of Statistics produced under the auspices of the Federal Government of Nigeria Economic Reforms and Government Project (ERGP).

The study covered baseline data on numbers and status of academic staff in six academic faculties of the University of Lagos over a ten year period (1999 – 2009). An open ended questionnaire was also given to a random sample of 175 academic staff (29 females and 146 males) to elicit responses on reasons for the low representation of females and recommendations of how to improve the under representation. The six academic faculties used in the study are the faculties of Pharmaceutical Sciences, Engineering, Environmental Sciences, Science, Basic Medical and Clinical Sciences.

The Evidence

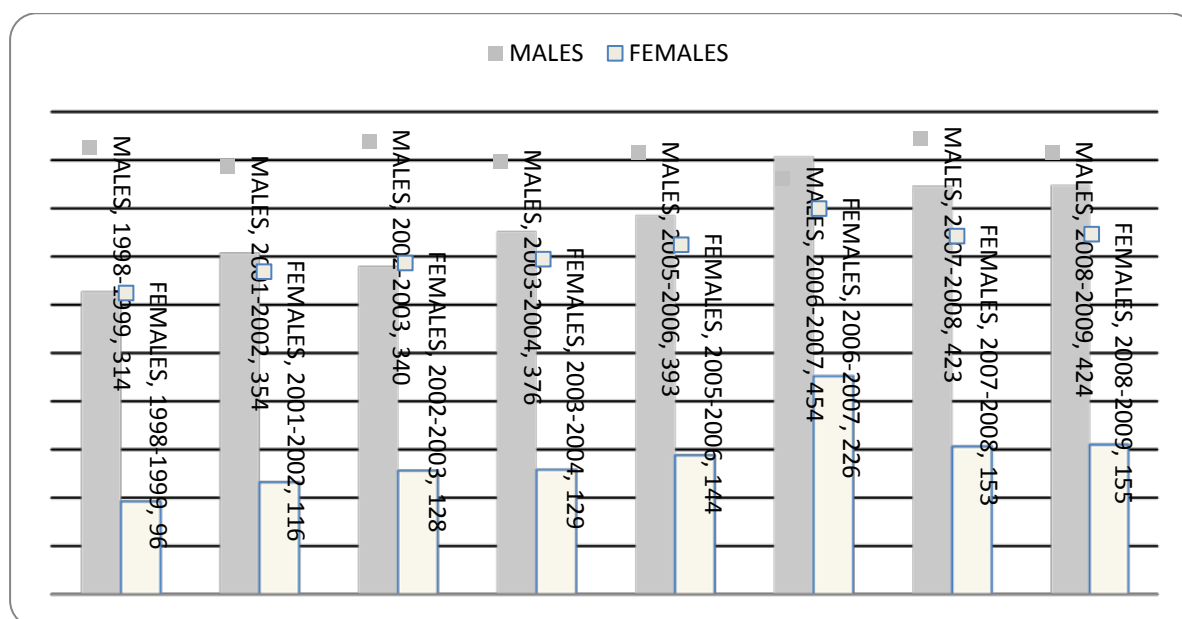


FIGURE 1: YEARLY NUMBER OF ACADEMIC STAFF IN SCIENCE & TECHNOLOGY FROM 1999 TO 2009 (BY GENDER)

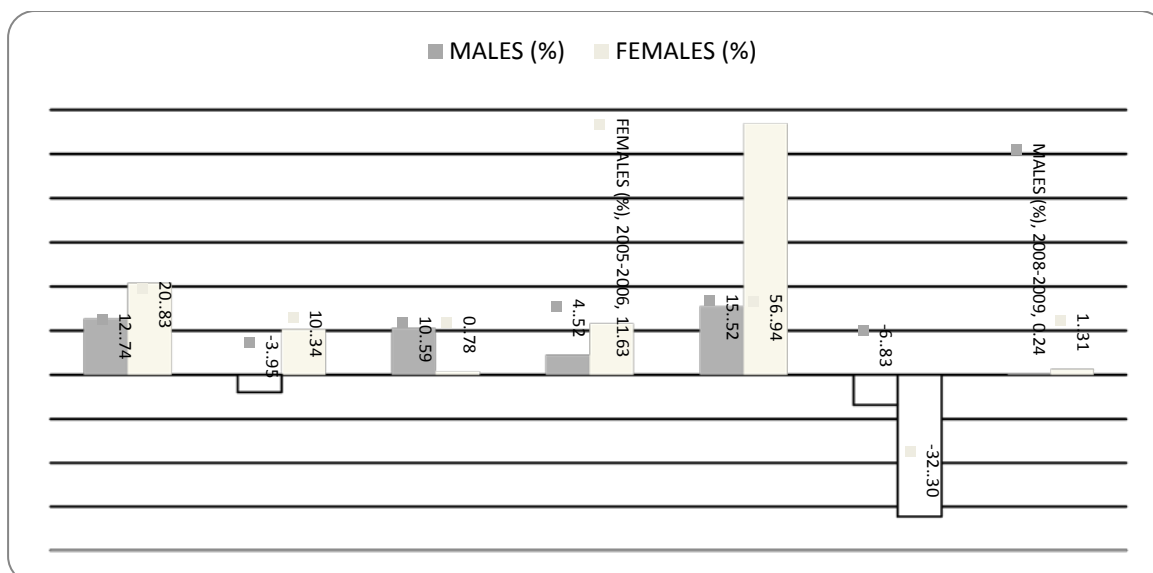


FIGURE 2: YEARLY ANNUAL MARGINAL GROWTH RATE OF ACADEMIC STAFF FROM 1999 TO 2009 IN SCIENCE & TECHNOLOGY BY GENDER (IN %)

Table 1: Percentage Difference between Male and Female Academics in S&T Faculties between 1999-2009

FACULTY	Academic Session			
	1998/1999	2008/2009		
	M (%)	F (%)	M (%)	F (%)
ENGINEERING	96	4	92	8
ENVIRONMENTAL SCIENCE	88	12	79	21
SCIENCE	84	16	74	26
PHARMACY	46	54	62	38
BASICAL MEDICAL SCIENCE	55	45	58	42
CLINICAL MEDICINAL SCIENCE	66	34	61	39
TOTAL	77	23	73	27

Table 2: Yearly Annual Marginal Growth Rate of Academics Staff in S &T by Gender (in %)

	M (%)	F (%)	TOTAL (%)
1998-1999			
2001-2002	12.74	20.83	14.63
2002-2003	-3.95	10.34	-0.43
2003-2004	10.59	0.78	7.91
2005-2006	4.52	11.63	6.34
2006-2007	15.52	56.94	26.63
2007-2008	-6.83	-32.30	-15.29
2008-2009	0.24	1.31	0.52
TOTAL	32.82	69.54	40.31

Table 3: Status of Female Academics in relation to their male colleagues in S&T Faculties in the University of Lagos 1999-2009

Faculty	1999		2009		1999		2009		1999		2009		1999		2009	
	Professor & Associate professor		Professor & Associate professor		Senior lecturers research fellows		Senior lecturers & research fellows		Senior Lectures research & fellows		Lecturers research fellows		Ass lect. Junior research fellow		Ass lect. Junior research fellow	
	M (%)	F (%)	M (%)	F (%)	M (%)	F (%)	M (%)	F (%)	M (%)	F (%)	M (%)	F (%)	M (%)	F (%)	M (%)	F (%)
Engineering	100	0	100	0	98.3	6.2	91.7	8.3	90.5	9.5	95.8	4.2	100	0	80.7	19.3
Environmental Science	100	0	77.8	22.2	85.8	14.2	82.4	17.6	91.3	8.7	80	20	50	50	71.5	28.7
Science	86.1	13.9	71.1	28.9	80	20	65.6	34.4	80.8	19.2	79.6	20.4	90.9	9.1	76.4	23.6
Pharmacy	92.8	7.2	62.5	37.5	35.8	64.2	66.7	33.3	42.1	57.9	60	40	0	0	0	0
Basic Medical Science	71.9	28.1	63.2	36.8	67.9	32.1	25	75	60.5	39.5	68.5	31.5	66.7	33.3	56.3	43.7
Clinical Medical Science	75	25	75	25	60	40	44.5	55.5	25	75	73.6	26.4	0	0	100	0
Total	86	14	76	24	72	28	62	38	68	32	79	21	91	9	74	26

Results

Results presented in Table 1 and Figure 1 showed that in all the six faculties within the ten year period women were consistently underrepresented in S&T. In 1998/99 academic year females were 23% of the total academic staff while males were 77%. However in 2008/2009 academic year females increased marginally to 27% as against 73% of the males. Under representation was highest in Engineering and Environmental Sciences with females comprising 8% and 21% respectively. Females appear to be nearing gender parity in the medical sciences (Pharmacy, Basic and Clinical Medical Sciences).

Table 2 present the data on the status of male and female academics across the various cadre. From Table 2 the following trend was evident. In 1999, 86% of the academic staff in the professorial cadre were males and only 14% females. However in 2009 while females in this cadre rose to 24% the males dropped to 76%. Females in the senior lecturer / senior research fellow category made significant increase in 2009, moving up from 28% to 38%. At the Assistant Lecturer / Junior Research Fellow cadre there was also a significant increase from 9% in 1999 to 26% in 2009. Despite these increases over the ten year period of this study females are still in the minority. In none of the faculties was gender parity achieved. In Engineering over the ten year period there was no female Professor or Associate Professor.

Table 3 and Figure 2 present the data on the annual marginal growth rate of academic staff in S&T faculties from 1999 – 2009. With the exception of the 2007/2008 academic year females have consistently maintained a steady growth. In the ten year period of the study females showed approximately 70% growth rate as against 32% of the males.

The sample in the study indicated the following as major reasons for the low numbers of women in S&T. For instance 75% indicated lack of encouragement; 69% masculine nature of S&T discipline; 66% societal expectations; 60% long working hours in laboratories and workshops; 59% family responsibilities. Also 58% of the women in the sample mentioned “Success anxiety” which may lead to isolation, intimidation and harassment, and lack of an institutionalized mentoring programme.

The males in the sample 75% indicated masculine nature of science; 72% family responsibilities and 69% lack of assertiveness and perseverance on the part of the females. However both males and females in the sample were in agreement on their recommendations for improvement. Interventions mentioned included institutionalizing affirmative action; promotion of deserving women into higher academic and administrative positions; scholarships and other incentives for females; encouraging female role models and mentors programmes for young females in academia, increasing the participation of young girls in S&T at secondary and tertiary levels of education; encouraging greater collaboration and networking amongst women; greater participation of females in research committees and making sure that admission policies to graduate studies give females an equal opportunity with male applicants.

Discussion

Issues on the under representation of women in S&T faculties continue to engage the attention of all stakeholders throughout the African continent. In Nigeria efforts to promote female entry into science and technology professions seem to be yielding the desired results as evidenced by the increasing trends in female enrolment in science, engineering and

technology courses at the tertiary level of education (Udeani, 2009).

The findings of this study corroborate previous findings from literature on under representation of women in S&T faculties (Andah 1991; Vilian 1999; Young 2004; Rimer 2005) Young delineated a gender gap and acute shortage of women in Engineering and Physics in academia. Also Ambe-Uva et al (2008) in support of the findings of this study argued that like the disparity in student enrolment, female recruitment, training and promotion have been conditioned by the vagaries that deny women active participation in S&T and concluded that, the fact that fewer women than men are enrolled in the universities for science and technology is one reason why there are fewer women among staff in academia.

With regards to status, the study supported previous findings of Singh (2002) and established that women occupy mainly the middle and lower cadre. Women lag behind male in all academic cadres. This under representation of women in science and technology faculties can be attributed to a lot of factors such as lack of opportunities for further training, unsupportive work environment, lack of female role models etc.

However this study established a continued annual growth rate in favour of females. Female academic over the ten year period of this study made an increase of approximate 70%. This is an encouraging development as we move into the second decade of the 21st century. Efforts should be made by universities to retain outstanding females in S&T to pursue graduate studies and provide incentives to retain them after graduation. Institutional changes like those highlighted in the study need to be implemented to sustain the growth rate of females.

References

- Ambe-Uva, T.N., Iwuchukwu, O., & Jibrin, L.J. (2008). Gender analysis in National Open University of Nigeria (NOUN): Implications and policy issues in bridging the divide. *Journal of Applied Sciences Research*, 4(7); 814 -825.
- Andam, A.B. (1999). African women scientists: Why so few? Proceedings of the Pan African Workshop of African Women in Science and Engineering (AWSE) Nairobi, Kenya, 29th November – 4th December. Pg – xiv.
- National Bureau of Statistics. (2007). *Annual abstract of statistics*. Abuja, Nigeria: Federal Government Economics Reform and Governance Project (ERGP)
- Rimer, S. (2005). For women in sciences: Slow progress in academia. New York Times.
- Singh, J.K. S (2002). Still a single sex profession? Female staff numbers in Commonwealth University. London; Association of Commonwealth Universities Gender Programme.
- Udeani, U. N. (2009). Access, enrollment and participation of females in science and technology faculties in Nigerian Universities. Unpublished Seminar Paper. University of Lagos, Nigeria
- UNESCO (1993). Women in higher education management. Paris, France: UNESCO.
- Valian V. (1999). Research on women in academia: Why so slow advancement of women? Retrieved from <http://www.case.edu/president/aaction/ResearchOnWomenInAcademia.pdf>.
- World Bank (2002). Nigeria University System. World Bank Project. Retrieved from http://www.wds.worldbank.org/serv/et/WDS/ContentServer/WDS/IB/2000/09/30/000094946_000927053254_3/Rendered/INDEX/multi.

Young, D. (2004). Women vastly underrepresented in academia in women's
Retrieved from <http://www.womensenews.org/article.cfm/dyn/aid/1672>.

UDEANI Uchenna

uudeanni@unilag.edu.ng

ucheudeani@yahoo.co.uk

Department of Science & Technology Education

University of Lagos

Lagos State

Nigeria.

EJIKEME Charity

Federal College of Education (Technical)

Akoka, Lagos State

Nigeria.