Original Research Article

Leadership and healthcare management needs and inclusion in the undergraduate medical education curriculum in Nigeria

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ABSTRACT

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| **Aims:** This study aimed at determining the leadership and healthcare management (LHM) needs of junior medical doctors (JMDs) and possible modes of inclusion into the undergraduate medical education (UME) curriculum. **Study design:** A cross-sectional study with stratified random sampling technique. **Place and duration of study:** College of Health Sciences and Teaching Hospital of Ladoke Akintola University of Technology (LAUTECH), Osogbo, Nigeria and State Specialist Hospital, Osogbo, Nigeria, between November and December 2018. **Methodology:** This study assessed 74 Nigerians comprised of medical students, junior doctors, nurses, administrators, lecturers, and hospital/college of health sciences executives (stakeholders). Participants completed an eight-item self-administered leadership and healthcare management questionnaire with a Likert scoring scale of 1 to 5. Data were statistically analyzed with significant p-value put at *P*<.05.  **Results:** Seventy-four (74) participants were studied, 45 males and 29 females. Out of 35 skills/competencies listed, three inclusions: Patient Safety, Judgment and Decision making, and Legal Issues in Medical Practice, were unanimously rated important or very important by all study participants. Participants slightly preferred that LHM be taught in the clinical years, and 12 weeks duration of training was the most popular choice. Among the commonly suggested methods of training, only the use of didactic lectures had statistical significance (χ2 = 25.767; *P* = .01). The preferred trainers were the Hospital/College of Health Sciences-based management experts (χ2 = 22.308; *P* = .03). The top envisaged barriers/challenges were time constraints and a lack of LHM lecturers. Overwhelmingly, the study participants agreed that LHM training will benefit JMDs and improve healthcare delivery.  **Conclusion:** The study has revealed very strong support for LHM training and identified the LHM competencies/skills needed by JMDs in Nigeria. More work is needed to refine this essential inclusion in the UME curriculum. |

*Keywords: Leadership, Healthcare management; Needs; Junior Medical Doctors; Inclusion; Undergraduate medical education curriculum*

1. INTRODUCTION

Leadership and healthcare management (LHM) had been defined as work that addresses strategy, delivery, and innovation within medical organizations [1]. Leadership and management skills are considered essential for high-quality patient care at all levels of the health system [2,3,4,5]. It is the responsibility of medical schools to train doctors to be diagnosticians and to understand resource management, financial considerations, and multi-professional team working [6].

Health services in public sectors in many countries, including Nigeria, are managed by healthcare professionals. However, medical schools in Nigeria, as well as in some other countries, do not prepare students to undertake these supervisory and managerial responsibilities. and it is known that the omission of even basic hospital management principles may affect how doctors organize multi-disciplinary teams or units in synergizing healthcare delivery [7]. This role of doctors has become more important because healthcare systems have become rapidly changing enterprises that face many challenges, such as financial constraints, greater demand for accountability, increasing regulation, and changes in patient populations [4]. The lack of preparation for this role results in poor quality of patient care and service, and suboptimal use of valuable resources [8]. There is, therefore, a growing acknowledgment that doctors need to develop leadership and management competencies/skills to become more actively involved in the planning, delivery, and transformation of patient services [1]

Globally, there is a consensus among stakeholders in medical education, healthcare delivery, and the medical profession that LHM needs to be introduced into the undergraduate medical education (UME) curriculum [2,4,9]. However, no consensus exists on what competencies or skills to include and how they could be incorporated into this curriculum. Efforts have been made in some countries – the United States of America (USA) [9,10], the United Kingdom (UK) [11] and Canada [12] – to develop leadership and management competencies/skill frameworks to guide medical schools but the usage and adaptability have been described as suboptimal [11]. In Nigeria there is no similar leadership and management competencies framework in place.

In Nigeria, there is a growing acknowledgment of the need to introduce leadership and management courses into the UME curriculum. A National Medical School Survey carried out in 2012 by the Federal Ministry of Health of Nigeria reported a general lack of managerial and entrepreneurial skills among medical doctors in Nigeria and saw health administration and management as an area needing improvement in the medical curriculum [7]. However, there is limited literature on how to incorporate LHM in the undergraduate medical curriculum [2,13,14,15]

In pursuit of competencies to incorporate, Quince et al. [2] reported that medical students believed that leadership and management education should encourage them to understand perspectives at three levels: society as a whole; organizations in which they would work; and individuals with whom they would interact. These considerations influenced students’ suggested topics for incorporation into UME curriculum [2]. The LHM competencies/skills considered critical are communication skills, ethics, conflict resolution, time management, managed care, and management principles [9,16].

In addition, coding and billing, quality improvement, public speaking, and risk management are also considered to be essential [9,16]. Varkey et al. added negotiation, delegation, teamwork, and community service to the list [9]. In a study that explored student experiences, participant students felt that any course on leadership and management should cover leadership, team management, communication, and resource management [9,15]. Patient safety was also seen as particularly important [2]. In the UK, medical students reported preferring experiential learning, with placements seen as providing teaching opportunities [2]. Structured observation, reflection, critical appraisal, and analysis of mistakes at all levels were mentioned as already existing opportunities for integrating leadership and management education [2].

There is, however, no clear consensus as to when in the medical education curriculum, how, and for how long LHM education should be provided [17]. In one study, students considered that an LHM course should last one semester during the clinical years [15], while others thought that LHM education should start early (pre-clinical) and be incorporated into the existing curriculum and ongoing [3,18]. This approach to LHM in the high-stakes, time-limited UME environment would permit students to develop and apply the leadership skills that are appropriate at different stages of their professional development and would place these skills into a meaningful context [18,19]. To this end, it has been stated that further work needs to be undertaken, using rigorous methods, to identify the most efficient and cost-effective curriculum innovations for the inclusion of LHM in UME [2].

Besides the debate on content, the possible barriers to implementation within medical schools have been identified as a lack of time given competing educational demands, possible disinterest in the activity itself on the part of some students and faculty (lecturers) [1] and the lack of formally trained LHM instructors [18]. Attitudes towards LHM education held by existing clinicians and medical students could also be viewed as potential inhibitors [2]. Other barriers include attitudes of society, attitudes of the medical profession and students, and the hierarchy among healthcare professions [2]. Also, limited resources, beliefs that leadership cannot be taught, lack of consensus on leadership content, and other factors could serve as barriers to implementation [4,20]

The aim of this study was to identify leadership and management competencies/skills to include in LHM training, and how they could be incorporated into the UME curriculum in Nigeria.

2. material and methods

The study was conducted in Osogbo, located in the Southwest of Nigeria. It has two Local Government Areas (Osogbo and Olorunda). The city has one College of Health Sciences and a public teaching hospital of Ladoke Akintola University of Technology (LAUTECH), Ogbomoso, one public State Specialist Hospital, Asubiaro, Osogbo, and two public health centres.

This study was a cross-sectional study with five target populations: junior doctors, senior nurses, administrators, lecturers, hospital/college of health sciences executives, and members of the medical students’ leadership. In this study, junior doctors were defined as those who had worked for five years or less after internship. Participants included in the study were all the junior doctors in both hospitals and health centres, all senior nursing staff (assistant director of nursing services and nurse managers who headed a unit or ward), all senior administrative staff who headed a unit, and all clinical heads of department in the hospitals who were consultants and medical doctors in administrative/management posts. Also included were heads of department, the dean, the provost, and the medical student leaders. In addition, lecturers who teach senior resident doctors (postgraduate) in a yearly two-week intensive management course were included.

The target population list was obtained from the sectional heads of each professional group in the institutions/facilities where the study was conducted. The total target population was 224 individuals. The sample size was estimated to be 30% of the total target population [21]. (67 individuals). To accommodate any attrition, the sample size was doubled to 134 study participants. The sample sizes from each facility and in each group were proportionately determined after the stratification of the participants into facilities and then professional groups. The list of the target population was stratified into professional groups in each facility and individuals in each group were assigned serial numbers. The numbers were written on pieces of paper, folded, and put in a separate container for each group. From each container, study participants for each group were randomly selected by balloting and this was done for all professional groups in each facility.

Included in the study were all randomly selected individuals who met the inclusion criteria and who gave consent. To meet the inclusion criteria, participants had to hold any of the following offices: head of a department, dean, provost, the medical students’ leadership in the medical school, and lecturers who taught in the yearly two-week intensive management course for the senior resident doctors. Also included were all junior doctors, senior nursing staff/nurse managers, administrative unit heads, clinical department heads, and members of the hospital management teams in the health facilities where the study was conducted.

The data was collected from the public health facilities (Teaching Hospital, specialist hospital, and College of Health Sciences) in November and December 2018. A self-administered leadership and healthcare management questionnaire with a Likert scoring scale of 1 to 5 (where 5 was strongly agreed/very important) was used. The questionnaire was newly designed and based on a literature search because of the non-availability of such an instrument. The questionnaires (134 copies) were distributed to the study participants by one of the authors and research assistants, who retrieved the questionnaires after completion.

The information obtained was entered into a spreadsheet and processed into a data form. Statistical analyses were carried out using version 21.0 of the IBM SPSS Software Package (SPSS Inc, Chicago, IL, USA). The results are presented in frequency tables, means, medians, interquartile ranges, and charts. Means were compared by student ‘t-tests and tests of association were done using the chi-square test. The statistically significant difference was p<.05.

Ethical approvals were obtained from the College Research and Ethics Committee, College of Health Sciences, Ladoke Akintola University of Technology, Osogbo, Nigeria, with approval number: LAU/CHS/CS/CREC//002, and Specialist Hospital Health Research Ethics Committee, State Specialist Hospital, Osogbo, with approval number: HREC/27/04/2015/SSHO/41. The questionnaire did not contain any personal details, and consent to participate was secured as participants completed the questionnaire. The questionnaire had a preamble to explain participants’ rights and participants could withdraw from the study at any time without negative consequences.

3. results and discussion

**3.1 RESULTS**

**3.1.1 The participants**

Ninety-two filled questionnaires were retrieved back. The overall response rate was therefore 68.7% (92/134). Eighteen (18) out of 92 completed questionnaires were discarded because they did not meet the inclusion criteria, leaving 74 study participants. Most of the participants were male (60.8%; n=45). The professional categories of the study participants were Lecturers/Executives 18 (24.3%), Nurses 18 (24.3%), Students leadership 15 (20.3%), Junior doctors 13 (17.6%), and Administrators 10 (13.5%).

**3.1.2 Leadership and health management competencies/skills**

Table 1 displays the opinions of participants regarding the relative importance of possible leadership and healthcare management competencies/skills in an undergraduate medical curriculum. The three inclusions that were unanimously rated important or very important by all participants were: Patient Safety, Judgment and Decision making, and Legal Issues in Medical Practice. The item that was least favoured (57%; n = 42) was Private Practice. The mean Likert scores for the listed competencies/skills by the participants ranged between 3.7 and 4.7, with a median of 4. The highest mean Likert score of 4.7 was recorded for Communication Skills, Patient Safety, Teamwork, and Health Policy and Delivery, while Coding and Billing had the lowest score (3.7 ±0.9). In all the 35 competencies/skills listed, only three (Legal Issues in Medical Practice, Conflict resolution, and Evaluation methods) were significant differences observed between the professional groups.

**Table 1. Percentages of participants who rated each topic important or very important   
(Maximum Likert score = 5)**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Topics | **Participants percentages and mean Likert scores** | | | | | | |  |
| Junior doctors  **\*N =13   %** | Nurses  **N = 18  %** | Administrators  **N =10  %** | Lecturers/Executives  **N = 18  %** | StudentLeaders  **N = 15  %** | Average  **N=74  %** | χ2 (p-value) | Likert scores (Mean ±SD) |
| Patient safety | 100 | 100 | 100 | 100 | 100 | **100** | ⁑ | 4.7 ±0.5 |
| Judgment & decision making | 100 | 100 | 100 | 100 | 100 | **100** | ⁑ | 4.6 ±0.5 |
| Legal issues. in medical practice | 100 | 100 | 100 | 100 | 100 | **100** | 11.302 (.02) | 4.6 ±0.5 |
| Teamwork | 92.3 | 100 | 100 | 100 | 100 | **98.5** | ⁑ | 4.7 ±0.5 |
| Responsibility of doctor | 100 | 100 | 100 | 100 | 86.7 | **97.3** | ⁑ | 4.6 ±0.6 |
| Human resource management | 92.3 | 100 | 100 | 100 | 93.3 | **97.1** | ⁑ | 4.5 ±0.6 |
| Communication skills | 92.3 | 100 | 100 | 100 | 93.3 | **97.1** | ⁑ | 4.7 ±0.6 |
| Health policy & delivery | 92.3 | 100 | 100 | 100 | 93.3 | **97.1** | ⁑ | 4.7 ±0.5 |
| Interpersonal relation | 92.3 | 100 | 100 | 100 | 86.7 | **95.8** | ⁑ | 4.6 ±0.6 |
| Healthcare advocacy | 84.6 | 94.4 | 90 | 100 | 100 | **95.8** | ⁑ | 4.3 ±0.6 |
| Quality improvement | 84.7 | 100 | 100 | 100 | 93.3 | **95.6** | ⁑ | 4.5 ±0.6 |
| Management principles | 76.9 | 100 | 100 | 100 | 100 | **95.4** | ⁑ | 4.4 ±0.7 |
| Management of knowledge & information | 94.7 | 94.4 | 100 | 100 | 86.7 | **95.2** | ⁑ | 4.4 ±0.6 |
| Health financing & costs | 84.7 | 94.4 | 100 | 94.4 | 93.3 | **94.5** | ⁑ | 4.4 ±0.7 |
| Planning in healthcare | 92.4 | 94.5 | 80 | 100 | 100 | **93.8** | ⁑ | 4.5 ±0.6 |
| Medical ethics | 92.3 | 94.5 | 80 | 100 | 100 | **93.4** | ⁑ | 4.6 ±0.6 |
| Clinical practice guide | 92.4 | 100 | 80 | 100 | 93.3 | **93.1** | ⁑ | 4.4 ±0.6 |
| Risk management | 92.3 | 100 | 90 | 88.9 | 93.3 | **92 .9** | ⁑ | 4.5 ±0.6 |
| National health insurance scheme | 100 | 94.4 | 80 | 94.4 | 93.4 | **92.4** | ⁑ | 4.2 ±0.6 |
| Time management | 84.6 | 100 | 80 | 94.5 | 100 | **91.8** | ⁑ | 4.5 ±0.6 |
| Understanding & management of self & others | 92.4 | 100 | 90 | 94.5 | 80 | **91.4** | ⁑ | 4.4 ±0.6 |
| Managed care | 92.3 | 88.9 | 90 | 94.4 | 86.5 | **90.4** | ⁑ | 4.2 ±0.8 |
| Leadership theory & models | 84.6 | 100 | 90 | 94.5 | 80 | **89.8** | ⁑ | 4.3 ±0.7 |
| National health scheme | 84.6 | 100 | 80 | 83.4 | 100 | **89.6** | ⁑ | 4.2 ±0.6 |
| Conflict resolution | 84.7 | 94.5 | 80 | 100 | 66.7 | **85.2** | 17.632 (.02)♦ | 4.2 ±0.7 |
| Evaluation methods | 61.6 | 100 | 80 | 88.9 | 92.9 | **84.9** | 23.547 (.02)♦ | 4.2 ±0.8 |
| Project management | 92.3 | 88.9 | 60 | 88.9 | 86.6 | **83.3** | ⁑ | 4.1 ±0.7 |
| Organizational culture structural design | 69.3 | 88.3 | 90 | 100 | 66.7 | **82.9** | ⁑ | 4.1 ±0.8 |
| Writing proposals | 84.6 | 88.9 | 70 | 100 | 66.6 | **82.0** | ⁑ | 4.1 ±0.8 |
| Investment principles | 92.3 | 83.3 | 60 | 88.8 | 80 | **80.9** | ⁑ | 4.1 ±0.8 |
| Networks in organization | 77 | 83.3 | 100 | 88.9 | 46.7 | **79.2** | ⁑ | 4.1 ±0.9 |
| Medical audit | 77 | 77.7 | 50 | 100 | 86.6 | **78.3** | ⁑ | 4.1 ±0.8 |
| Negotiating skills | 84.6 | 83.4 | 40 | 88.9 | 64.3 | **72.2** | ⁑ | 3.9 ±0.8 |
| Coding & billing | 61.5 | 61.1 | 80 | 77.8 | 80 | **72.1** | ⁑ | 3.7 ±0.9 |
| Private practice | 77.0 | 61.1 | 10 | 77 | 60 | **57.0** | ⁑ | 4.3 ±1.0 |
| **TOTAL AVERAGE** | **87.3** | **93.3** | **84.3** | **95.4** | **87.5** | **89.6** | ⁑ | **4.4 ±0.6** |

***Key: \*N:*** *Total number of participants in each professional category* ⁑*No significant difference recorded*

**3.1.3 Time and duration of the training**

Table 2 shows the opinion of the participants as to when the LHM should take place during the UME curriculum. The clinical years 4 to 6 were more favoured (70.1%; n = 52).

Fifty-nine (79.7%) of the study participants made suggestions as regards the duration of the training in weeks, and the suggested duration ranged from 1 to 152 weeks. The most popular choice of duration for the training was 12 weeks (22%; n = 13) followed by 4 weeks (16.9%; n = 10), 6 weeks (11.8%; n = 7), and 2 weeks (8.5%; n = 5).

**Table 2: Professional groups opinions of when LHM training should occur (Maximum Likert score = 5)**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Year** | **Agree/strongly agree opinions and mean Likert scores  N = 74** | | | | | | |  |
| **Junior doctors  N =13 %** | **Nurses   N = 18 %** | **Adminstrators  N = 10 %** | **Lecturers/Executives N = 18 %** | **StudentLeaders  N = 15 %** | **Average**  **N =74  %** | **χ2 (P-value)** | Likert scores- ♦M ±SD |
| Pre-clinical & clinical years 2-6 | 69.3 | 66.7 | 50 | 55.6 | 86.7 | **65.7** | ⁑ | 4.2 ±3.6 |
| Clinical years 4-6 | 61.6 | 83.3 | 60 | 72.2 | 73.3 | **70.1** | ⁑ | 3.9 ±1.1 |
| Clinical year 4 only | 53.3 | 44.4 | 30 | 33.4 | 53.4 | **42.8** | ⁑ | 3.2 ±1.1 |
| Clinical year 5 only | 61.6 | 50 | 50 | 33.4 | 60 | **51** | ⁑ | 3.4 ±1.2 |
| Clinical year 6 only | 53.9 | 33.4 | 40 | 38.9 | 46.7 | **42.6** | ⁑ | 3.3 ±1.3 |

⁑*No significant difference recorded*   
*♦M±SD = Mean and standard deviation of the Likert scores for each option*

**3.1.4 Training methods**Figure 1 shows the suggested training options and the number and percentages of the participants who agreed/strongly agreed to their use. When the responses of the participants were analyzed between the professional groups, only didactic lectures had a statistically significant preference (χ2 = 25.767; *P* = .01).

**Figure 1: Number and percentages of the participants who agreed/strongly agreed to each training method**

**3.1.5 Preferred trainers**  
Study participants favoured external (Hospital & College of Health Sciences) management experts as preferred trainers over the existing University Department of Management/Administration. However, both groups of trainers recorded statistically significant p-values (Table 3). The least favoured option (51.9%; n = 38) was establishing a Department of Medical Education.

**Table 3: Participants’ opinions on who should conduct the LHM training (agreed/strongly agreed)**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **The trainer** | **Agree/strongly agree opinions and mean Likert scores** | | | | | | |  |
| **Junior doctors N =13 %** | **Nurses  N = 18 %** | **Administrators N = 10 %** | **Lecturers/Executives N = 18 %** | **StudentLeaders N = 15 %** | **Average**  **N=74  %** | **χ2 (p-value)** | **Likert score** ♦M ±SD |
| Hospital & college of health sciences-based management experts | 53.9 | 94.4 | 80 | 77.8 | 66.6 | **74.6** | 22.308 (.03) | 4.0 ±0.8 |
| Relevant professionals in society | 84.7 | 66.6 | 80 | 72.2 | 60 | **72.7** | ⁑ | 3.9 ±1.0 |
| Existing University department of management/ administration | 46.2 | 88.9 | 70 | 61.1 | 33.3 | **59.9** | 37.612 (.002) | 3.7 ±1.1 |
| Establish a new department of medical education | 69.2 | 27.9 | 40 | 55.6 | 66.7 | **51.9** | ⁑ | 3.2 ±1.1 |

⁑*No significant difference recorded*   
♦*M±SD = Mean and standard deviation of the Likert scores for each option*

**3.1.6 Barriers/challenges to the introduction of LHM**Participants considered time constraints (67.8%; n = 50) and the lack of LHM lecturers (66.3%; n = 49) as the two top barriers to including LHM in the undergraduate medical education curriculum. The details are shown in Table 4.

**Table 4: Participants’ choices of possible barriers/challenges to include LHM in the medical curriculum**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Barriers or**  **Challenges to the introduction of LHM to UME** | **Agree/strongly agree opinions and mean Likert score (N = 74)** | | | | | | |  |
| **Junior doctors N =13 %** | **Nurses  N = 18 %** | **Administrator N = 10 %** | **Lecturers/Executives N = 18 %** | **StudentLeader N = 15 %** | **Average**  **N =74  %** | **χ2 P-value** | **Likert score** ♦M ±SD |
| Time constraints | 77 | 66.7 | 70 | 38.9 | 86.6 | **67.8** | ⁑ | 3.6 ±1.1 |
| Lack of LHM lecturers | 76.9 | 72.2 | 60 | 55.6 | 66.7 | **66.3** | ⁑ | 3.6 ±1.1 |
| Attitude of clinical students | 53.9 | 77.8 | 50 | 44.4 | 40 | **53.2** | ⁑ | 3.4 ±1.0 |
| Financial constraints | 53.9 | 50 | 40 | 38.9 | 53.3 | **47.2** | ⁑ | 3.2 ±1.2 |
| Resistance from health sector | 38.5 | 33.4 | 40 | 22.2 | 60 | **38.8** | ⁑ | 3.1 ±1.1 |

⁑*No significant difference recorded*   
♦*M±SD = Mean and standard deviation of the Likert scores for each option*

**3.1.7 Benefits of LHM Training to junior doctors**

Almost all the participants (92.5%; n = 69) agreed or strongly agreed that LHM will be beneficial for junior doctors.

**3.2 DISCUSSION**

This study identified leadership and management competencies/skills for LHM training in the UME curriculum in Nigeria, and how they could be incorporated into the curriculum. Three groups of important or very important competencies/skills emerged. Those competencies/skills that were unanimous are related to patient safety and the judgment and decision-making of the doctor as well as the possible consequences (legal issues). Competencies/skills that were highly valued (between 70% and 99%) were a combination of personal - (e.g. time management), or system-related (e.g. national health insurance) competencies/skills. Private practice had the poorest agreement which could be due to the general opinion in Nigeria that exposure of medical students to private practice may distract them from the training. Even postgraduate doctors (resident doctors) are not allowed to own or participate in private practice. At one time or other the Nigerian government has disallowed doctors with less than five years of post-graduation experience to own any private health facilities.

The strong agreement with many competencies/skills is indicative of the perceived need but is impractical to include all in the UME curriculum. If the lowest cutoff of 95% agreement of competencies/skills is arbitrarily applied as being ‘Very Important’ then these competencies are patient safety, judgment and decision making, legal issues in medical practice, teamwork, responsibility of a doctor, human resources management, communication skills, health policy and delivery, interpersonal relations, healthcare advocacy, quality improvement, management principles and management of knowledge and information.

These very important competencies/skills listed above are like what has been reported in previous studies [1,2,9,16]. Some studies listed communication skills, ethics, conflict resolution, coding and billing, time management, managed care, and management principles [1,2,9,16]. Several studies expanded this list to include quality improvement, risk management, patient safety, resource management, team management, time management and teamwork [1,2,9]. Although previous studies had suggested coding and billing as one of the competencies/skills to be included in the LHM training in UME [9,16], this topic received low agreement in this Nigerian study. The low rating could be a result of the fact that coding and billing are usually done by the hospital’s Account and Record departments and are not viewed as a task for the doctors.

There was no clear preference for when this teaching could take place and those who preferred the clinical years echo what has already been suggested in the literature [15]. This preference is not surprising as students begin to interact with patients, society, and other health professionals in healthcare delivery, and are expected at this time to carry out some clinical responsibilities and administrative activities. However, the suggestion of a combination of pre-clinical and clinical years combined was equally strong which in turn supports the notion that LHM should start early in UME and be incorporated into existing curriculum [3,18]. The underlying intent of the early commencement of LHM is to allow students to develop and apply leadership skills that are appropriate at different stages of their professional development and place the skills into a meaningful context [18,19]. It was, however, surprising that both popular options include the clinical years which are reportedly always under pressure in terms of curriculum content.

The relative popularity of 12-week duration (22% of the participants) for the training is similar to a study by Martins et al. who reported a preference for one semester (15 weeks) [15]. But it should be noted that this study was done in two countries that have arguably more LHM expertise in place in their health system. Nonetheless, in a situation where nothing is being mentioned about LHM in the UME curriculum in Nigeria and coupled with time constraints in UME, a gradual and progressive introduction of LHM may be realistic and acceptable. Hence, the duration ranging from 2 to 12 weeks (72.8% of the participants combined) may be a practical starting point.

More than 70% of the participants agreed/strongly agreed with each of the five listed methods of training: experiential learning, role play, case study, small group seminar/ workshop, and didactic lectures. However, didactic lectures were the preference which is possibly due to the didactic methods which are dominant elsewhere in the curriculum. In contrast, experiential learning was preferred in the UK [2], Pakistan [18] and the USA [9], while in Canada online courses are being used [12]. But online courses might not be ideal as study participants in a study in the USA rated writing assignments, online modules, and didactic lectures as the least effective teaching methods [9]. The lack of interest in online and distance learning (which offers expanded opportunities in terms of when LHM competencies/skills can be learned) might change in the post-COVID-19 reality.

The statistical significance of the opinions of the study participants on using the existing University Department of Management and Administration to conduct the training is in contrast with the apparent preference for external or non-university experts. The apparent preference could be an indication that this is a subject area that requires input from those in the field, but the inclusion of non-university staff can be operationally problematic in terms of the identification, management, and payment of external experts.

The barriers/challenges to the introduction of the LHM into the UME curriculum are surmountable. In Nigeria, the duration of UME has been increased from six years to seven years – one-year of basic sciences, three years of basic medical sciences culminating in the award of a first degree in one of the basic medical sciences, and a further three years of clinical training. This new duration can allow LHM courses to be spread across the years. Similarly, the use of the existing university resources with some input from the experts in the field could solve the lack of LHM lecturers within the schools of medicine.

It is not surprising that the participants overwhelmingly agreed that LHM training would benefit junior medical doctors and patients. Junior medical doctors in Nigeria shoulder great responsibility for both healthcare delivery and the management of that delivery, immediately after graduation. The lack of formal management and leadership training to prepare them to perform this role could contribute to system-related outcomes (e.g. sub-optimal quality of care) and personal-related consequences (e.g. burnout). Studies have shown that junior doctors who encounter difficulties [22] at work experience burnout [23] stemming from workplace burden and stress, which could have been prevented or made manageable with some LHM training during UME.

**3.2.1 Limitations of the study**

The study was done in one of the many medical schools/teaching hospitals in Nigeria. Therefore, the results of this study should be cautiously generalized, as more studies are needed to add strength to the findings of this study.

4. Conclusion

The study has revealed strong support for LHM competencies/skill training during UME that would benefit JMDs in Nigeria. The identified needs are still too wide-ranging and the preferred time for inclusion was the clinical years 4-6, with 12-week duration. The preference for known teaching methods (didactic lectures) and the trainers (Hospital/College of Health Sciences-based management experts) in this study might change in the post-COVID era. More work is needed to prioritize competencies/skills that are practical to address within current time and practical constraints so that this long-standing need for JMDs can be addressed. Nevertheless, with the overwhelming agreement for the introduction of LHM into the UME curriculum in this study and coupled with the non-availability of data in the literature on the subject matter from Nigeria, the findings of this study can be handy to be considered for use. The introduction of LHM training into the UME curriculum based on these findings can be perfected over the years as new data emerge from more studies.

Consent (WHEREVER applicable)

Written informed consent was sought and obtained from all the study participants

Ethical approval (WHEREVER applicable)

Ethical approvals were obtained from the College Research and Ethics Committee, College of Health Sciences, Ladoke Akintola University of Technology, Osogbo, Nigeria (LAU/CHS/CS/CREC//002), and Specialist Hospital Health Research Ethics Committee, State Specialist Hospital, Osogbo, Nigeria (HREC/27/04/2015/SSHO/41).

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