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Original Article

Non-Communicable Disease

MANAGING THE BURDEN OF DISEASE THROUGH MEDICAL EDUCATION: A PILOT SURVEY TO ASSESS THE KNOWLEDGE REGARDING NON-COMMUNICABLE DISEASE RISK FACTORS AMONG MEDICAL SCIENCE STUDENTS

Farrah Pervaiz, Aleena Khan, Hafsa Khalil, Noor Shah, Rehana Javaid, Farva Rashad*, Rahmeen Pervaiz*, Faiza Rabbani, Imran Asghar, Muhammad Afsheen Iqbal**

Armed Forces Institute of Cardiology/National University of Medical sciences (NUMS) Rawalpindi Pakistan, *Army Medical College/National University of Medical Sciences (NUMS) Rawalpindi Pakistan, **Shifa International Hospital, Rawalpindi Pakistan

ABSTRACT

Objective: To determine the knowledge of Non-Communicable Diseases (NCDs) and its risk factors among medical science students.

Study Design: Online cross-sectional survey.

Place and Duration of Study: It was conducted in various medical colleges and allied health institutes of all provinces of Pakistan, from Mar to Aug 2021.

Methodology: It was an online cross-sectional survey conducted in selected medical colleges and allied health institutes of all provinces of Pakistan through convenience sampling. Students of post-graduate, unwilling to participate, physically ill and non-cooperative were excluded from the study. Ethical approval was obtained from Institutional Ethical Review board AFIC/NIHD. Informed written consent was taken from all participants Data was collected through a NCDs risk factors knowledge E-questionnaire. Data collected includes socio-demographic characteristics age, gender, education, and knowledge of various NCDs risk factors.

Results: A total of 641 respondents participated in the study; the mean age of study population was 23.01 ± 4.10 years. Out of 259 (40.4%) males and 382 (59.6%) females were participated. Majority of the participants were MBBS students 288 (45%), whereas other disciplines included in the survey were BDS 19 (2.5%), Pharm-D 13 (2%), Nursing 135 (21%) and Allied Health sciences 110 (17.2%). Out of 587 (91.6%) students knew that NCDs were not contagious. Majority 547 (85.3%) of the respondents were aware of different types of NCDs like cardiovascular diseases, chronic respiratory diseases and cancers. Almost 616 (96%) of the participants knew about normal ranges for blood pressure. Majority of the students tried to impart health education regarding NCDs to the community 415 (64.7%).

Conclusion: This study highlights a lack of awareness regarding NCDs risk factors among students of allied health sciences (17%) as compared to the MBBS, BDS, Nursing and Pharm-D students. The ministry of health (MONHRS) and education needs to re-organize teaching and training programs for various disciplines in medical education.

Keywords: Non-communicable diseases (NCDs), Medical science, Allied health science.

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INTRODUCTION

Non-communicable diseases (NCDs) are a public health concern globally. Some of the most prominent NCDs are hypertension, diabetes mellitus, cardiovascular disease (CVD), cancers, injuries, and chronic respiratory disease.[1] Numerous factors have been cited as contributing to the development of NCDs. These, among others, include unhealthy dietary practices that are influenced by the food environment, physical inactivity, obesity, smoking, and heavy alcohol consumption.[2]

According to WHO, it is estimated that the global NCD burden will increase by 17% in the next ten years, and in the African region by 27%. Almost half of all deaths in Asia are now attributable to NCDs, accounting for 47% of global burden of disease.[3] Over 80% of cardiovascular and diabetes deaths, 90% of COPD deaths and two thirds of all cancer deaths occur in developing countries.[4] The transition from infectious diseases to NCDs in LMICs has been driven by a number of factors, often indicative of economic development: a move from traditional foods to processed foods high in fat, salt and sugar, a decrease in physical activity with sedentary lifestyles, and changed cultural norms such as increasing numbers of women using tobacco.[5] The impact of globalization and urbanization in low-and-middle-income countries (LMICs) has accelerated the growing burden of NCDs. However, governments in LMICs are not keeping pace with ever

Correspondence: Dr Farrah Pervaiz, Director R&D Dept, Armed Forces Institute of Cardiology/NIHD, Rawalpindi Pakistan

expanding needs for policies, legislation, services and infrastructure to prevent NCDs and poor people are the worst sufferers.[6]

Pakistan is currently facing a double burden of disease. The proportion of annual deaths attributed to non-communicable diseases (NCDs) is significantly greater than communicable diseases - 58% versus 35%.[1] Mortality rates due to NCDs-including cardiovascular diseases, cancers, chronic respiratory diseases and diabetes–continue to rise, significantly hampering progress towards Sustainable Development Goal.[3] Further, each day in Pakistan, approximately 100 people require amputations due to diabetes and trauma. It is projected that between 2010 and 2025, nearly 4 million Pakistanis will lose their lives to NCDs.[7]

There are a number of actions and strategies which are beyond the remit of health systems that can be implemented to influence the social determinants of NCDs.[8] There is also more that could be done to explore the role of social determinants within the health sector itself to tackle NCDs, particularly in terms of making sure that physicians' training is fit for purpose.

The common approach to medical education has a disease focus and narrow contextual understanding. Traditional curriculums are not designed to demonstrate the links between living conditions and diseases, and treatment is often emphasised over disease prevention. LMICs are experiencing rapid demographic and epidemiological transitions and need a healthcare workforce that is able to respond to the current global health challenges in clinical settings. It is suggested that medical education needs to change to prepare future physicians. A "transformative" medical curriculum needs to explore the convergence of public health and medicine by taking a holistic view of a patient, as well as incorporating population level attributes. It should be context specific and integrate teachings of global health, social determinants, and medical science with increased interest in underserved communities.[9]

Health and education sectors need to work together to devise, implement, and fund training programs that equip health workers to prevent and treat chronic conditions. The impact of investments could be maximized by planning for a rational and needs-based skills mix, and by ensuring that training programs achieve the right balance between in-service and pre-service training, and that they equip health workers with the required competencies. This study will help us to determine the knowledge of medical science students regarding NCDs and develop evidence based training needs and capacity building for addressing the global burden of disease.

METHODOLOGY

It was an online cross-sectional survey conducted in selected medical colleges and allied health institutes of all provinces of Pakistan through convenience sampling, from March to August 2021.

Inclusion Criteria: Study participants included were medical and allied health students of various medical colleges and universities

Exclusion Criteria: Post graduate students. Students unwilling to participate, physically ill and non-cooperative were excluded from the study.

Ethical approval was obtained from Institutional Ethical Review board AFIC/NIHD and permission to conduct the study was granted. Informed written consent was taken from all participants Data was collected through a NCDs risk factors knowledge E-questionnaire. Data collected includes socio-demographic characteristics age, gender, education, and knowledge of various NCDs risk factors.

Collected data were processed and analyzed using software Statistical Package for Social Sciences (SPSS), version 22. Statistical analyses were done using descriptive statistics. The data presented on categorical scale were expressed as frequency and corresponding percentage, while the data presented on continuous scale were presented as mean, median and standard deviation from the mean.

RESULTS

A total of 641 respondents participated in the study; the mean age of our study population was 23.01 ± 4.10 years. The gender distribution consisted of 259 (40.4%) males and 382 (59.6%) females. Majority of the participants were studying MBBS 288 (45%), whereas other disciplines included in the survey were BDS 19 (2.5%), Pharm-D 13 (2%), Nursing 135 (21%) and Allied Health Sciences 110 (17.2%). A greater number of participants were studying in fourth 162 (25.3%) and final year 160 (25%) of their undergraduate education program.

In response to questions related to awareness regarding spread of non-communicable disease 587 (91.6%) students knew that NCDs were not contagious and could not be spread from one person to another. Similarly majority 547 (85.3%) of the respondents were aware of different types of NCDs like cardiovascular diseases, chronic respiratory diseases and cancers. Almost 616 (96%) of the participants knew about normal

ranges for blood pressure. Majority of the students tried to impart health education regarding NCDs to the community 415 (64.7%).

Table-I: Demographic characteristics and responses of study participants (n=641).

Questions	Responses, n (%)
Age (Mean ± SD)	23.01± 4.10
Gender	
Male	259 (40.4%)
Female	382 (59.6%)
Education	
MBBS	288 (45%)
BDS	19 (2.5%)
Pharm-D	13 (2%)
Nursing	135 (21%)
Allied Health Sciences	110 (17.2%)
Others	75 (11.7%)
Year of Education	
1st year	101 (15.7%)
2nd year	151 (23.6%)
3rd year	67 (10.4%)
4th year	162 (25.3%)
Final year	160 (25%)
NCDs are not transmitted from person to person	
Yes	587 (91.6%)
No	54 (8.4%)
NCDs are common in Pakistanis	
Agree	573 (89.4%)
Disagree	68 (10.6%)
Knowledge about types of NCDs	547 (85.3%)
Knowledge about normal range of BP	
120/80mmHg	616 (96%)
130/90 mmHg	24 (3.74%)
150/100 mmHg	1 (0.15%)
Knowledge about normal fasting blood glucose level	
<100 mg/dl	531 (82.8%)
>100 mg/dl	110 (17.2%)
Knowledge about random blood glucose level, n (%)	
<200mg/dl	586 (91.4%)
>200mg/dl	55 (8.53%)
Health education to community members about NCDs	
Sometimes	415 (64.7%)
Always	144 (22.4%)
Never	82 (12.7%)
Obesity and NCDs, Normal value of BMI	
10-15kg/m^2	45 (7.02%)
18-24 kg/m^2	570 (89%)
26-30 kg/m^2	26 (4.05%)
Habits of smoking and NCDs	
Yes	616 (96.1%)
No	25 (3.9%)
Excess of salt intake and NCDs	
Yes	625 (97.5%)
No	16 (2.49%)
Air pollution and NCDs	583 (90.9%)
Cancers and NCDs, Screening for cancers	
Yes	620 (96.7%)
No	21 (3.27%)
Injuries and NCDs, Creating awareness for accidents	
Agree	631 (98.4%)
Disagree	10 (1.56%)
Association of Physical activity and NCDs	
Yes	622 (97%)
No	19 (3%)

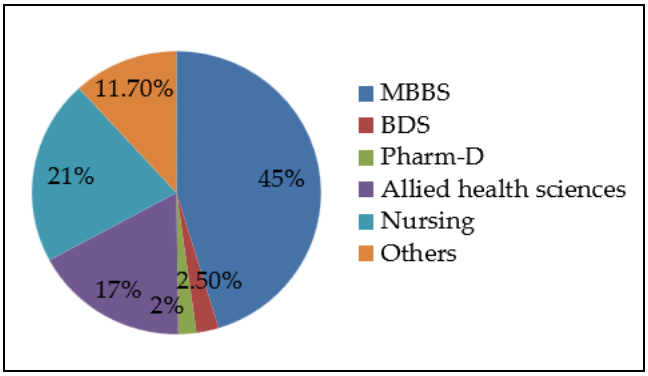

Figure-1: Categorization of study participants according to field of medical science (n=641).

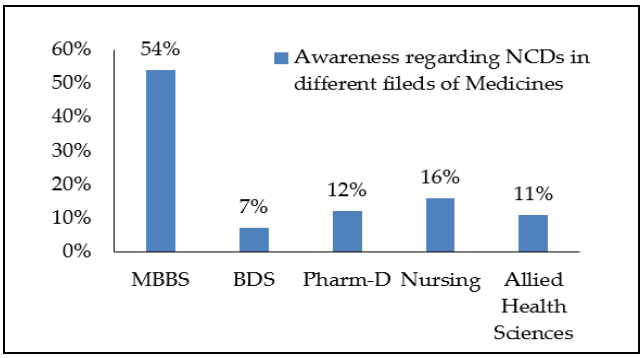

Figure-2: Awareness regarding NCDs in different fields of medical education.

DISCUSSION

This study was conducted during COVID-19 pandemic and we tried to evaluate the knowledge of our young medical science students regarding various types of NCDs and the associated risk factors.

Very limited research has been reported in the literature, which can guide that what medical education and training should focus in curricula as far as the prevention of NCDs is concerned.

In a perspective in which the curriculum is already crowded in both undergraduate and postgraduate education, the emphasis should be on using climate change to help meet the aims of existing courses. The topics for specific approaches to prevent NCDs and various strategies can be incorporated into public health courses as a part of the curriculum in undergraduate medical education, with brief optional courses in residency and continuing medical education for established practitioners. Postgraduate training should also target those who may be considering or already are practicing in high burden regions.[10]

This study reported that the majority of our study participants had a better knowledge rearding various

types of NCDs and their risk factors which is in line with Alam *et al* documenting that more than 80% of the study participants had heard of the words diabetes, hypertension and coronary heart disease as NCDs.[11] In Ojo *et al,* study majority (94.1%) of the respondents was aware that NCDs could not spread between people through contact.[12]

In this study the number of respondents from allied health sciences (11%) and bachelors of dental surgery (7%) were in a limited number and there was a lack of awareness regarding NCDs risk factors. As most of their educational curriculum is focused on the technical aspects of their relevant field of the study, therefore the knowledge and information regarding NCDs should be incorporated in the curriculum development of students of allied health sciences, lady health workers and community health workers as they are in close contact with the community and need to be aware of the possible risk factors and be able to identify high risk population. These findings are consistent with Talwar *et al*[13-16] stating that in order to learn delivering high-quality health services for prevention and control of NCDs, broad and frequent exposure to disease prevention and health promotion core competencies has value, but may not sufficiently prepare students to deliver health-promoting services confidently. Creative curricula highlighting prevention's relevance throughout clinical practice and incorporating formal opportunities to apply knowledge and build experience may result in greater success.[17,18]

A recently published report mentions that medical education also requires greater orientation of providers to the social determinants of health as well as to gender and equity issues. Curricula in medical schools should keep pace with the changing dynamics of public health, health policy, and health demographics. Medical and nursing graduates in the country should be well trained, prepared, and motivated to practice in rural and urban environments. Medical education and training needs to be reoriented by introducing competency-based, health system connected curricula, and continuous education.[14]

LIMITATIONS OF STUDY

This study will help us to determine the knowledge of medical science students regarding NCDs and develop evidence based training needs and capacity building for addressing the global burden of disease. Due to pandemic situation in the country and examinations in various institutions we were able to collect limited data.

CONCLUSION

This study highlights a lack of awareness regarding NCDs risk factors among students of allied health sciences (17%) as compared to the MBBS, BDS, Nursing and Pharm-D students The ministry of health (MONHRS) and education needs to reorganize teaching and training programs for various disciplines in medical education. There is a need to include teaching and training modules on prevention and control of NCDs into medical curriculum keeping in view the rising burden of NCDs in Pakistan. In addition, integrated teaching and management of chronic NCDs should be promoted by involving key specialties of community medicine, pediatrics, medicine, and allied subjects. Capacity building of teachers is required for introducing innovative integrated teaching methods.

Conflict of Interest: None.

Author's Contribution

FP: Principal investigation, AK: Manuscript writing, HK, NS, RK, FR, RP, FR: Data collection, IA, MAI: Data collection & collaboration.

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