

## Self-Assessment of Non-communicable Diseases related Competencies among Interns of a Medical Institute of Nepal

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### ABSTRACT

#### Introduction

One of the essential strategies to tackle rising burden of non-communicable diseases (NCD) is development of competent local human resource. Assessing the level of competencies in pre-service curriculum is the first step towards building an NCD-ready health workforce. This study aimed to assess perception of competence in delivering World Health Organization Package of Essential Non-communicable diseases (WHO-PEN) interventions among interns of Maharajgunj Medical Campus of Institute of Medicine (IOM).

#### Methods

A survey was conducted at Maharajgunj Medical Campus of Institute of Medicine among interns using online questionnaire. The questionnaire contained seven sections on different competencies to prevent and manage NCDs. Ethical approval was obtained from Institutional Review Committee of IOM. Descriptive analysis was done to identify the level of competencies. Statistical analysis was performed using Microsoft Excel and IBM SPSS version 20.

#### Results

Majority of the interns expressed low to moderate confidence in managing patients with presenting complaints of major NCDs. Most interns could perform diagnostic procedures and screening related to NCDs and mental disorders under supervision only (56.9%-68.6%), and one third felt they were unable to perform spirometry and visual inspection of cervix with acetic acid. Most interns could provide counseling on major NCD risk factors, self-care and palliative care only under supervision. Majority could not identify key NCD service performance measures and their data sources.

#### Conclusion

Skills of independently diagnosing and screening for NCDs, counselling on healthy lifestyle, alcohol and tobacco cessation and conduct motivational interviewing, self-care and palliative care were limited.

#### Keywords

Competency based education, non-communicable disease, undergraduate medical education

## INTRODUCTION

Low- and middle-income countries are facing a rapidly rising burden of non-communicable diseases (NCDs) and an important strategy to tackle the problem is development of local human resource to address the NCDs and their risk factors.<sup>1</sup> In Nepal, 60% of disability-adjusted life-years is attributed to NCDs.<sup>2</sup> Behavioral risk factors for NCD such as tobacco, alcohol, unhealthy diet, physical inactivity, high blood pressure, and high body mass index are prevalent in the Nepalese population.<sup>3</sup> Environmental risks such as ambient and indoor air pollution are important contributors to NCDs in the country, particularly chronic obstructive pulmonary diseases (COPD).<sup>4,5</sup>

Ministry of Health and Population of Nepal endorsed the World Health Organization Package of Essential Non-communicable diseases (WHO-PEN) in July 2016.<sup>6</sup> WHO-PEN provides evidence based, cost-effective and high impact intervention for integrated management of diabetes, hypertension, chronic obstructive pulmonary disease (COPD) and other cardiovascular risk factors.<sup>7</sup> It aims to provide diagnostics and essential medications using trained frontline health workers and expand coverage to all the districts of Nepal in phase wise manner.<sup>8</sup>

Assessing the level of competencies in pre-service curriculum is the first step towards building a non-communicable diseases (NCD)-ready health workforce. Institute of Medicine (IOM), a pioneer medical institution of Nepal, produces 700-800 MBBS graduates every year through its constituent and affiliated colleges which follow the same curriculum. In this regard, the Curriculum Development and Evaluation Committee (CDEC) of IOM conducted an exercise to identify coverage of competencies related to NCD service delivery in the existing curriculum. This study aimed to assess perception of competence in delivery of WHO-PEN interventions among interns of Maharajgunj Medical Campus (MMC) of IOM.

## METHODS

This was a survey conducted at Maharajgunj Medical Campus, a constituent medical campus of IOM, Tribhuvan University. The study population included Bachelor of Medicine and Bachelor of Surgery (MBBS) interns who were undergoing one-year rotatory internship at Tribhuvan University Teaching Hospital.

Data was collected using web-based approach. Prior to data collection, participants were oriented onsite about the study and its objectives, following all the COVID safety protocols. Participants were oriented about each item in the questionnaire and how to respond to the questions. Questionnaires were administered using Google forms via email or

Viber groups in English language. Single response from each student was ensured in Google forms settings by choosing 'Limit to 1 response'.

The questionnaire, composed of seven sections, based on the format shared by the WHO Southeast Asia Regional NCD network, has been pre-tested among MBBS interns at All India Institute of Medical Sciences (AIIMS), New Delhi. The first two sections have questions that assess the participants' level of confidence in managing patients with shortness of breath, high blood pressure, raised blood sugar, chest pain and signs of stroke and performing procedures like measurement of blood pressure, electrocardiogram (ECG), spirometry, use of glucometer and visual inspection of cervix with acetic acid and their interpretation. It also includes clinical examination of the breast, head, neck, oral cavity, screening for common mental disorders and assessment of tobacco and alcohol use. Third section assesses the level of proficiency in communication skills in relation to conducting motivational interviews, providing brief intervention for tobacco and alcohol use, assessment and counselling for dietary and physical activity and skills for organization of health promotion campaigns. Fourth section deals with knowledge regarding protocol-based management of hypertension, cardiovascular diseases, diabetes, COPD and asthma. Fifth section assesses level of skills for imparting self-care and palliative care in hypertension, diabetes, COPD, asthma and cancer. Sixth section assesses skills in the use of data in service delivery improvement and decision making. The final section assesses the level of skills in the organization and management of service delivery. The response to questions in section one (score of 1-4) range from no confidence to high level of confidence. For questions in sections two, three and five, the responses are categorized into: cannot perform, can perform under supervision, and can perform independently. For questions in sections four, six and seven, the responses are dichotomous i.e., yes or no.

Statistical analysis was performed using Microsoft Excel and IBM SPSS version 20. Descriptive analysis was done to identify the level of competencies.

The ethical approval was obtained from the Institutional Review Committee of IOM. (Reference no: 250 (6-11) E2/077/078). Written digital consent was taken from study participants prior to completing the survey form. Access to the survey questionnaire was provided only after the participants gave their consent by ticking the designated box.

## RESULTS

Out of 68 interns meeting eligibility criteria, 51 completed the online questionnaire over the span of seven days giving the response rate of 75%. Majority

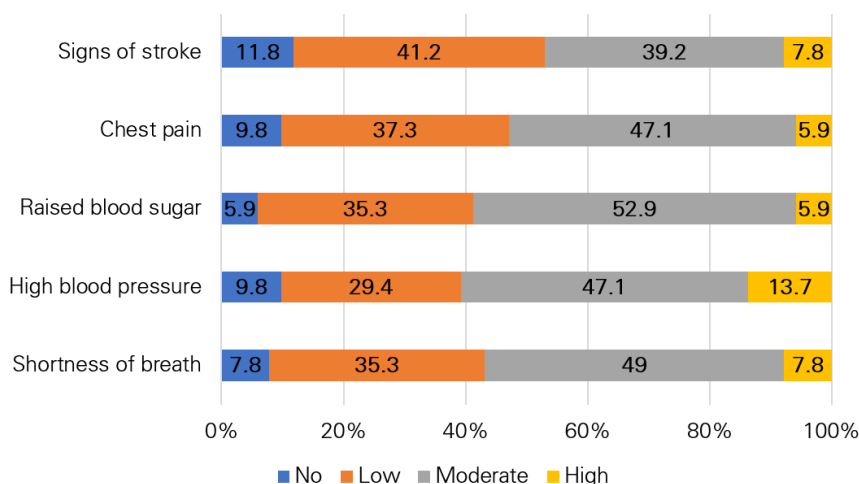


Figure 1. Self-rated level of confidence in managing different presenting complaints and signs (n=51)

of the participants expressed low to moderate level of confidence in managing patients with presenting complaints of shortness of breath- low 18 (35.3%), moderate 25 (49%); high blood pressure (BP)- low 15 (29.4%), moderate 24 (47.1%); raised blood sugar – low 18 (35.3%), moderate 27 (52.9%); chest pain - low 19 (37.3%), moderate 24 (47.1%) and signs of stroke- low 21 (41.2%), moderate 20 (39.2%). The complaint where most participants expressed high level of confidence was managing high BP i.e., 7 participants (13.7%), compared to no confidence in managing signs of stroke i.e., 6 participants (11.8%). (Figure 1)

While assessing the level of confidence in performing different procedures, 51 participants (98%) could

measure blood pressure independently. Majority of the interns expressed their ability to independently use and interpret glucometer findings and interpret the findings of chest X ray for COPD i.e., 39 participants (76.5%) and 38 participants (74.5%) respectively. The procedures that most felt they could perform under supervision were 12 lead electrocardiogram (ECG) -35 participants (68.6%), use of spirometry or peak flow meter -29 participants (56.9%), conduct clinical breast examination – 31 participants (60.8%), visual inspection of cervix with acetic acid – 33 participants (64.7%) and screen for common mental disorders – 33 participants (64.7%). Almost half of all the interns could assess tobacco use i.e., 24 participants (47.1%) and harmful use of

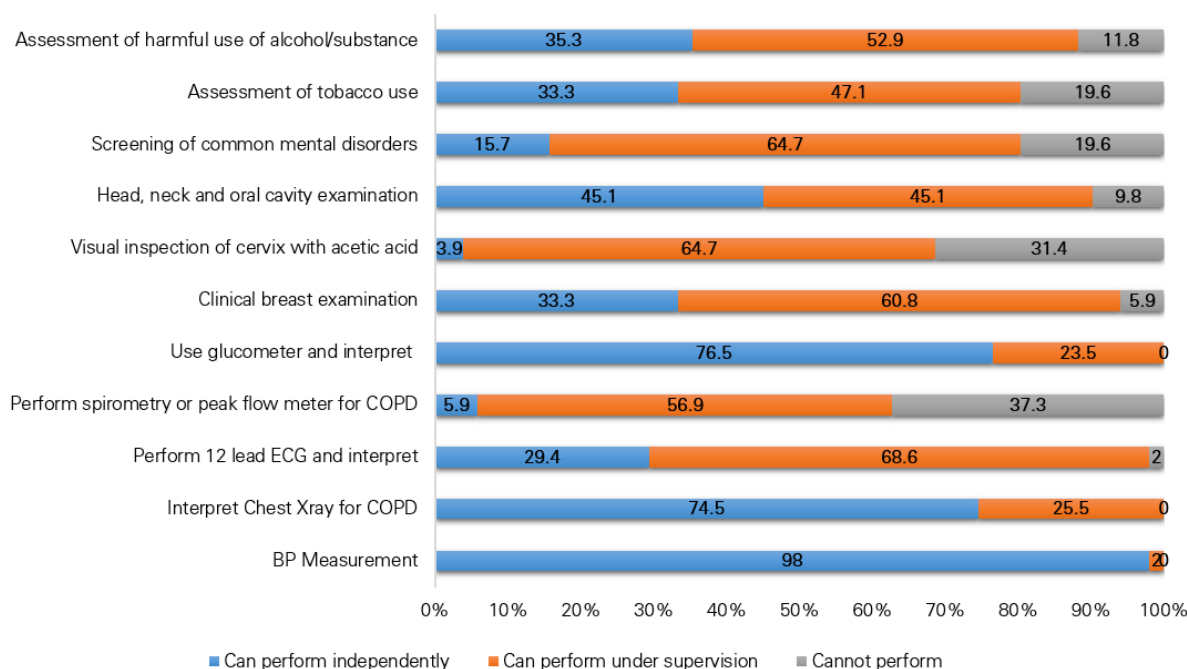


Figure 2. Self-rated level of confidence in performing different procedures (n=51)

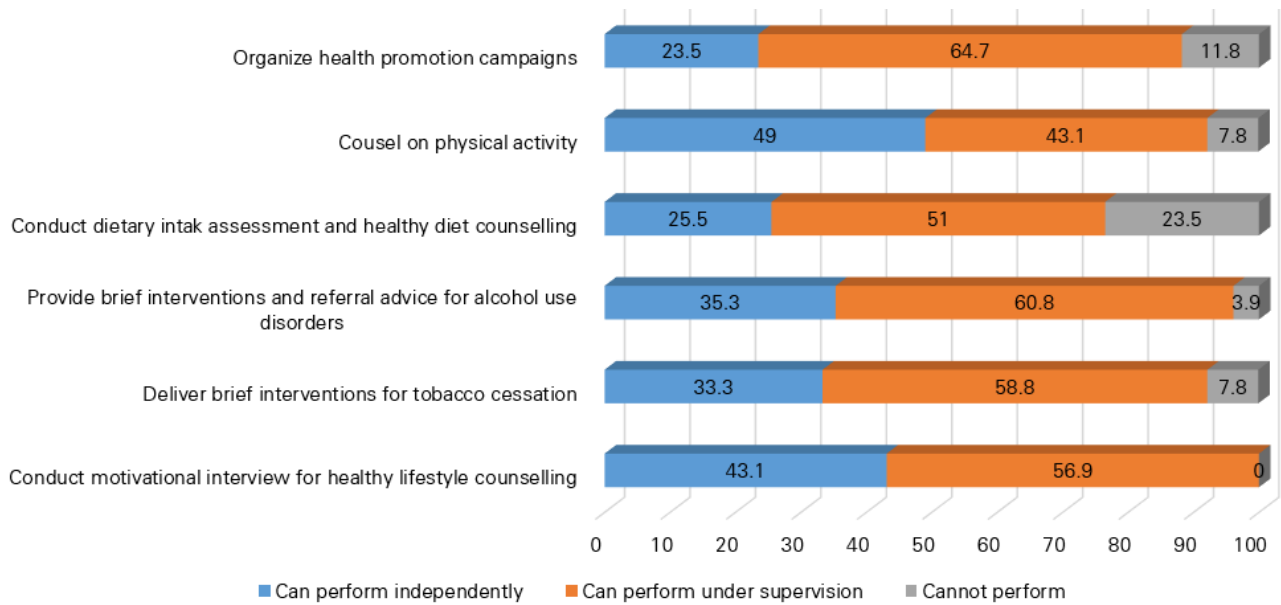


Figure 3. Level of self-reported proficiency in communication skills for different activities (n=51)

substance and alcohol i.e., 27 participants (52.9%) under supervision. Approximately one third i.e., 16 participants (31.4%) felt that they were unable to perform spirometry and visual inspection of the cervix with acetic acid. (Figure 2)

Regarding proficiency in communication skills, nearly half of the interns i.e., 25 participants (49%) stated their ability to independently counsel the patients on physical activity based on standard recommendations. Most stated they would be able to demonstrate the required competencies under supervision. (Figure 3)

Having knowledge regarding the protocol-based management of different NCDs like hypertension and cardiovascular disease i.e., 44 participants (86.3%), diabetes mellitus i.e., 39 participants (76.5%) and COPD/asthma i.e., 47 participants (92.2%) was expressed by most of the participants.

About two thirds of interns (31 participants) reported ability to independently counsel patients for self-measurement of BP/adherence to medication (60.8%) and adherence to health lifestyle behavior i.e., 32 participants (62.7%). Most interns reported ability to counsel under supervision for self-monitoring of blood glucose, medication and

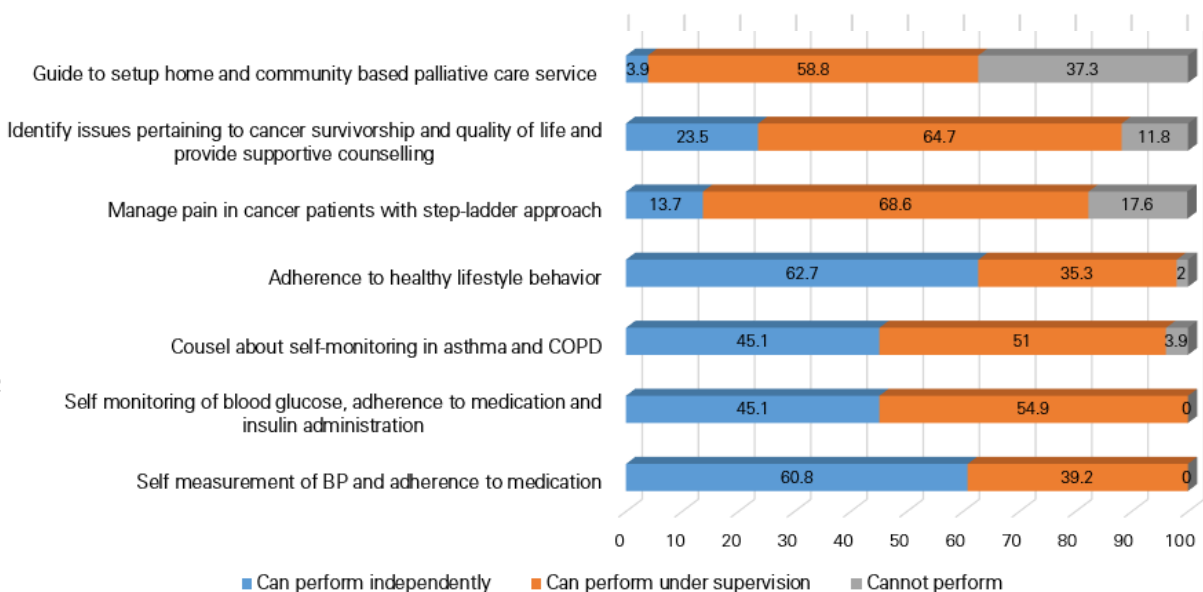


Figure 4. Self-reported level of skill in counseling for self-care and palliative care in different NCDs (n=51)

insulin administration i.e., 28 participants (54.9%), self-monitoring in asthma and COPD i.e., 26 participants (51%), manage pain in cancer patients with step-ladder approach i.e., 35 participants (68.6%), provide supportive counselling to cancer patients on survivorship and quality of life i.e., 33 participants (64.7%) and guide to setup home and community based palliative care service with the help of community health workers, family members and social workers i.e., 30 participants (58.8%). However, 19 participants (37.3%) also expressed inability to guide to setup home and community based palliative care service. (Figure 4)

Regarding the use of data in service delivery improvement (data not shown), majority of the interns could not identify key NCD service performance measures and their data sources i.e., 34 participants (66.7%) and could not explain the cohort approach for monitoring NCD patients and control rates for hypertension and diabetes i.e., 41 participants (80.4%). Only half of the participants could perform basic analysis like calculation of frequency and health service performance indicators i.e., 26 participants (51%), develop simple clinical pathway in a health care facility to smoothen the care and improve patient's experience i.e., 26 participants (51%) and improve continuity of care of NCD patients using refill of medicines, recall reminders and manage referral between primary to secondary/tertiary care centers i.e., 26 participants (51%). Less than half of the interns could plan clinical mentoring of primary care workers to manage NCD services in a health care catchment population i.e., 23 participants (45.1%). More than four fifths of the interns i.e., 43 participants (84.3%) could not comprehend dashboard for monitoring people centered NCD services and 39 participants (76.5%) were not familiar with the steps of team-based care approach and task shifting or sharing to manage NCD patients in primary care setting.

## DISCUSSION

This study aimed to assess the self-rated levels of competency among medical interns in prevention and management of different NCDs. For the presenting complaints of different NCDs, very low proportion of participants expressed high level of confidence in management ranging from 5.9% for raised blood sugar and chest pain, 7.8% for shortness of breath and signs of stroke to 13.7% for high blood pressure. For all these conditions, majority expressed low to moderate level of confidence. Regarding the level of confidence in performing various procedures for NCDs and risk factors assessment, the highest level of confidence was expressed in BP measurement, glucometer use and interpretation of chest Xray for COPD. Interns could perform majority of other vital procedures only under supervision despite

being taught protocol-based management of major NCDs. In a study from Delhi conducted among doctors working as medical superintendents, most rated themselves competent in managing various NCDs except for cancer.<sup>9</sup> In Nepal, studying MBBS under government scholarship mandates signing of a two years of service bond after graduation. During this time, graduates are deputed to work as the head of district hospitals and primary health care centers and are expected to provide overall medical care to the general population. Competency-based education for NCD prevention and management in medical curricula of Nepal could help fill this gap in pre-service training.

Nearly two-third of interns could screen for common mental disorders under supervision only whereas less than two in ten could independently. However, less than one-fifth could independently assess tobacco use and harmful use of alcohol and substance. This finding has major implication with regards to service delivery at primary care level as there is a huge treatment gap already with a lifetime prevalence of any mental disorder being about 10% in the population.<sup>10</sup> A review of mental health content in existing medical curricula of Nepal found considerable disparities in teaching/learning modalities and suggested newer teaching learning methods to deliver basic mental health service.<sup>11</sup> Core competencies for mental, neurological and substance use disorders have been identified and is under the process of integration in the existing curricula in sub-Saharan African region.<sup>12</sup> Similarly, efforts are underway to develop integrated curriculum for tobacco and alcohol in undergraduate medical education to introduce brief interventions for tobacco and alcohol cessation.<sup>13,14</sup> Replication of such efforts in Nepal is required to develop core competencies in mental health and NCD risk factors.

Communication skills are vital in prevention and control of NCDs. About 23% to 43% of the interns were skilled to independently perform the communication skills for different activities to prevent NCDs like healthy lifestyle counselling, brief interventions for tobacco and alcohol, counselling on healthy diet and physical activity and organize health promotion activities. Under the National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases and Stroke in India, counselors are recruited to provide services for NCD prevention and control.<sup>15</sup> The multisector action plan for prevention and control of NCD in Nepal also highlights the role of counselling and development of lifestyle counselling curriculum.<sup>16</sup> However there is no provision of recruitment of counselor and existing human resources like medical and nursing officers are supposed to carry out this responsibility in their health facilities after PEN package training. While MBBS students are

provided with opportunities to practice counselling skills in NCDs during the community-based field activities and ward postings, the amount of exposure is not adequate. Integration of counselling skills for NCDs and risk factors has already been practiced elsewhere<sup>17</sup> and community-based teaching learning activities like community health diagnosis and family health exercises coupled with ward teaching could be a good platform to sharpen these competencies.

Most of the interns were found to be less competent in counselling skills related to self-care and palliative care. Palliative care teaching is inadequately addressed in most of the Nepalese medical curricula but the interest in this field is growing. Due to chronic illnesses like heart diseases, cancer and growing number of elderly populations, there is increased demand for physicians to provide palliative care. Thus, it is important to consider integrating palliative care into medical curriculum. People centered NCD care, or the chronic care model ensures focus on patient's need and makes patient's interaction with the health facility more gratifying.<sup>18</sup> Major components of people centered NCD care include communication with patients, coordination and collaboration with different levels of health system, community engagement, culture of sharing, comprehensive care and continuity of care.<sup>18</sup> Most interns in our survey were not familiar with the concepts of people centered NCD care, team-based care and task shifting mainly because this is not addressed in the curriculum. Training of the faculties in medical schools about this concept is the first step towards filling this gap and building competency for holistic NCD care.

Majority of the MBBS curricula in Nepal are subject centered and time-based. Most of the teaching learning activities and assessment methods focus more on knowledge than on attitude and skills. As future medical graduates are expected to efficiently take care of the health needs of the community, which includes NCDs, competency based medical education (CBME) has been suggested to fulfill this curricular gap. In contrast to traditional educational methods, CBME is a learner centered and active process that incorporates feedback between the teacher and the learner to fulfill the desired competency outcomes regardless of the duration.<sup>19</sup> Predominantly content based MBBS curriculum of IOM needs transformation into competency-based curriculum to support acquisition of core skills by the MBBS graduate to deliver people centered NCD care. Consensus building among the stakeholders and necessary resource allocation are the first steps towards achieving this goal. Investing in pre-service education to improve the quality of healthcare services to tackle the burgeoning epidemic of NCDs is likely to be more cost effective than in-service training of health workers in Nepal.

The strength of this study is that it has highlighted the gaps in the competency for NCD prevention and control. This exercise has revealed the possible areas where work is needed during revision of the MBBS curriculum in the future. Few limitations of this study were small sample size and self-reported responses to the questions. Observation of the participants in their working environment would have best assessed the skills but this was not possible due to the restrictions of COVID-19 pandemic.

## CONCLUSION

Majority of interns had low to moderate level of confidence in managing presenting complaints of different NCDs. Most of the participants could perform the basic diagnostic and screening procedures only under supervision. Skills of independently counselling on healthy lifestyle, alcohol and tobacco cessation and conduct motivational interviewing, self-care and palliative care were limited.

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## CONFLICT OF INTEREST

The author(s) declare that they do not have any conflicts of interest with respect to the research, authorship, and/or publication of this article.

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