

Use of Healthcare Services by Patients with Non-Communicable Diseases in Nepal: A Qualitative Study with Healthcare Providers

SAVAL KHANAL¹, LENNERT VEERMAN², LISA NISSEN³, SAMANTHA HOLLINGWORTH⁴

ABSTRACT

Introduction: The healthcare systems in many Low-and Middle-Income Countries (LMICs) like Nepal have long focused on preventing and treating infectious diseases. Little is known about their preparedness to address the increasing prevalence of Non-Communicable Diseases (NCDs).

Aim: This study aimed to investigate the use of healthcare services by patients with NCDs in Nepal.

Materials and Methods: Nine healthcare providers (including health assistants, pharmacy assistants, nurse, specialised nurse, practicing pharmacists, chief hospital pharmacist, doctors and specialised doctor) from Pokhara, Nepal, were recruited using purposive sampling. In depth interviews about the magnitude of NCDs, first point of care, screening and diagnosis, prevention and management, follow-up, and healthcare system responses to NCD burden were conducted. Data were thematically analysed with a deductive approach.

Results: Although the healthcare system in Nepal is still primarily focused on communicable infectious diseases, healthcare providers are aware of the increasing burden of NCDs and NCD risk factors. The first points of care for patients with NCDs are government primary healthcare facilities and private pharmacies. NCDs are often diagnosed late and opportunistically. NCD prevention and treatment is unaffordable for many people. There are no government sponsored NCD screening programs.

Conclusion: There are problems associated with screening, diagnosis, treatment and follow-up of patients with NCDs in Nepal. Healthcare providers believe that the current healthcare system in Nepal is inadequate to address the growing problem of NCDs. The health system of Nepal will face challenges to incorporate programs to prevent and treat NCDs in addition to the pre-existing communicable diseases.

Keywords: Healthcare service delivery, Health system, Low-and middle-income countries, Non-communicable disease

INTRODUCTION

NCDs are the leading causes of morbidity and mortality worldwide. Nearly 63% (36 million) of annual global deaths are due to NCDs [1]. Once known as the diseases of affluence, NCDs are now a major problem in LMICs: 86% of NCD deaths occur in LMICs. Nepal is a LMIC of 28 million people, many of whom (44.2%) live below the poverty line as defined by multidimensional poverty index [2]. It ranks 157 out of 187 countries in global human development index and GDP per capita income is approximately US\$700 [2]. NCD mortality is 900/100,000 population in Nepal. In 2012-2013, 86% (287,616 cases) of new inpatient visits were due to NCDs [3]. Two NCDs [chronic obstructive pulmonary disease and essential (primary) hypertension] were among the top ten causes of inpatient mortality in public hospitals during 2013–2014. The major NCDs in Nepal are (in order of burden): cardiovascular diseases; injuries and neuropsychiatric conditions; cancers; chronic respiratory diseases; and diabetes [3]. The population aged 65 years and older is projected to rise from 4.2% in 2000 to 5.8% in 2025 and so the burden of NCDs will increase [4].

In 2013-2014, Nepal had over 4,485 public health institutions with 7,550 beds, employing over 93,000 personnel. During same period, over 209,000 patients were admitted to hospital, 1.5 million were treated as outpatients, and 357,000 used emergency services [5]. The total budget allocated to the health sector was Nepali rupees (NPR) 3.52 billion (US\$335 million), which is approximately 5% of the total national budget [5]. The Ministry of Health, through the Department of Health Services (DHS), is responsible for providing healthcare services. In the public sector; tertiary, regional, and, zonal hospitals provide services to patients in urban areas. In rural areas, services are provided by Primary Healthcare Centres (PHC), health posts, and sub-health posts [6]. PHCs have at least one doctor but health posts and sub-health posts are generally run by Health

Assistants (HA), Assistant Health Workers (AHW) and/or community medical auxiliaries. There are 13 privately operated medical colleges with teaching hospitals, 17 hospitals operated by Non-Government Organisations (NGO), 17 eye hospitals and 488 private nursing homes [5]. There have been more pharmaceutical companies and diagnostic research laboratories established in Nepal in recent years [5]. The Government of Nepal, through its Essential Healthcare Services (EHCS) program, provides primary health services, basic secondary care services and a limited number of essential medicines free of cost to the consumer [7]. The claim of universal access to this service has been questioned, as some studies have reported that free medicines were not available in healthcare facilities most of the time and there were many administrative steps in accessing free medicines [8,9]. We aimed to explore the use of healthcare services by patients with NCDs in Nepal by way of interviews with healthcare providers.

MATERIALS AND METHODS

We conducted a qualitative study during March 2015 in the western region of Nepal. We included a range of healthcare providers (doctors, nurses, pharmacists and health assistants) in the study.

Study Site

Interviews were conducted with healthcare providers in Pokhara. Cities in Nepal were divided into three categories based on population size and infrastructure: metropolitan, sub-metropolitan and municipality. Pokhara, one of four sub-metropolitan cities in Nepal, is the only sub-metropolitan city in Western Nepal, with a population of approximately 256,000 people distributed over 18 wards [4]. This city was selected as the study area because it is the second largest city in Nepal and the inhabitants encompass the range of socioeconomic levels.

Sampling Method

We purposively sampled healthcare providers based on our convenience. We selected sample to make it representative in term of participants' educational background, working condition and length of experience. Initially 10 participants were invited, nine agreed to participate. The participants were invited by a telephone call. We reached saturation of themes in the interviews with the nine participants [10]; there was a repetition of data and the new information produced a minimal change to the themes and ideas already confirmed by previous interviews. There was provision to add the interviewees if saturation was not met.

Study Method

The data were collected by audio-recording of the interview. An experienced interviewer explained the objective to each of the participants then interviewed each of the nine healthcare providers separately. The data were transcribed in Nepali and then translated into English. Some quotes were normalised to enhance the readability. Responses to questions were transcribed in decoded format. The interviews were conducted in the participant's office during working hours, for which prior appointments were obtained. Interviews lasted for about 20-25 minutes. The interviewer asked the questions as per the interview guide. The guide was used to provide a broad framework for the interview. Though in qualitative study number of questions is not generally fixed, however the participants were expected to give their feedback on each themes mentioned in data analysis section of this manuscript. Respondents were also asked to contribute additional information.

Ethical Issues

The study was approved by the Institutional Review Committee, Nepalgunj Medical College, Kohalpur, Nepal and Ethics Committee of the School of Pharmacy, The University of Queensland, Australia. The respondents were assured about the confidentiality of information given and written informed consent was obtained.

STATISTICAL ANALYSIS

A literature review was used to develop themes for coding and analysis [11,12]. Our themes were based on two important parts of the research objective: 1) healthcare service use; and 2) non-communicable diseases. The topics of screening and diagnosis of diseases, first point of care for patients, prevention and treatment of diseases and follow-up of patients with chronic condition have been explored in studies of healthcare services [13-16]. Hence, we developed the first set of themes based on these concepts. The second set of themes was influenced by concepts related to NCDs e.g., NCDs as a problem and the response of the healthcare system to NCDs [17]. Each participant's response was read several times to obtain a sense of the whole and was compared with the notes taken during the interview. The contents were coded in accordance with the predetermined themes [11,12]. Additional information provided by the participants was placed in a new category if required. Direct quotes were contextualised, rendered readable and presented in the habitual language of the participants.

RESULTS

Demographic Information

Participants comprised various health professions: health assistant, pharmacy assistant, nurse, and specialised nurse, practicing pharmacist, chief hospital pharmacist, doctor and specialised doctor [Table/Fig-1]. There were four males and five females. The age of the participants ranged from 23 to 52 years. The participant's experience ranged from one to 23 years (median eight years). Four participants had worked in both rural and urban settings. Five participants practiced in both public and private settings.

Participants	Age (years)/ Gender	Descriptions
P-1	26/F	Currently working as the health assistant in a healthpost in a rural setting. She has an overall experience of five years in similar settings and sees around 20 patients daily.
P-2	28/F	Chief of pharmaceutical services in a government regional hospital since last one year. She worked as a community pharmacist for three years prior to this employment, but at present, her job role involves mainly administrative things.
P-3	52/M	Doctor specialised in general practice, practicing privately in a clinic inside a community pharmacy in urban setting. He has an overall experience of 23 years and attends more than 50 patients daily.
P-4	36/M	Doctor practicing in a primary healthcare centre in rural part. He has an overall nine years of experience and sees around 25 patients daily.
P-5	24/F	Pharmacist practicing in a private pharmacy. She has an experience of one year and approximately 20 patients visit her pharmacy daily.
P-6	38/M	Health assistant since last 16 years, currently working in semi urban health post (20 patients daily). Also a pharmacy assistant and owns and run a pharmacy where he sees more than 20 patients daily.
P-7	23/F	Works as a staff nurse in general medicine ward of a private hospital in urban setting since last three years. The hospital has 25 beds in general ward.
P-8	41/F	Nurse specialised in mental health in a private teaching hospital, has 20 year experience as nurse and see around five patients daily.
P-9	30/M	Pharmacist working in a private pharmacy since last eight years in rural area. Currently attends more than 25 patients daily.

[Table/Fig-1]: Demographic information of the participants.

Magnitude of NCDs in Nepal

All participants recognised NCDs as a major health problem in Nepal. Most said that Cardiovascular Diseases (CVD), cancer, diabetes mellitus and chronic respiratory diseases are the major NCDs in Nepal, while one also included mental health conditions. All were aware of the increasing trend in the NCD burden but only one participant quantitatively estimated the NCD burden.

"Previously the prevalence of communicable diseases was more than 70% among the patients visiting healthcare facilities. However, these days the number of NCD cases almost equals those with acute diseases. Approximately 45%-50% of all patients visiting healthcare facilities are due to NCDs these days. Generally, young patients come with acute communicable diseases and most adults visit healthcare facilities because of NCDs. Most commonly, we see hypertension, diabetes mellitus (both undiagnosed and diagnosed), COPD, chronic skin conditions etc., in our healthcare center." (P-4)

Most participants attributed the increasing prevalence in NCD to three main causes: unhealthy diet and sedentary lifestyle; poor health literacy; and inadequate response of the healthcare system.

First Point of Care for Patients with NCDs

Three participants (P-1, P-4, P-6) said that government healthcare facilities providing primary healthcare services (i.e. sub health posts, health posts and primary healthcare centres) are the first point of care for people with NCDs whereas the others said pharmacies are the first point of care. A doctor (P-4) working in a PHC highlighted the lack of resources to diagnose and manage NCD conditions at the PHC and said that, in many cases, the PHC may just work as a centre where patients are referred either to a higher level government centre or to private facilities.

"Patients visiting PHC are generally poor. They can't afford to leave their job or household works to visit the healthcare center routinely. Although many treatments are provided free of charge, patients are not aware of this. Hence, they visit health care centers,

especially PHC, when they have a severe condition. Therefore, most of the poorer patients are diagnosed at the PHC for the first time. For confirmation we refer them to tertiary care centre... In our Governmental organogram district hospitals and regional hospitals are situated above PHCs. So, we generally refer our patients there. If somebody is interested to go to a private healthcare facility, we will also refer them there". (P-4)

NCD Screening and Diagnosis

All participants said there were no government sponsored screening programs for the diagnosis of NCDs and this makes it very difficult to diagnose NCDs early in the disease course. One participant (P-2) was especially concerned about the rural areas, where most of the population are dependent on government healthcare facilities like sub health posts, health posts and primary healthcare centres.

"Consultants and physicians are not available at health posts and sub health posts in rural settings. Rural settings do not have well equipped laboratories. So, the timely and correct diagnosis is a problem, and this in turn, creates problems in providing proper treatment. I do not expect there are such problems in urban areas though..." (P-2).

Participants also said that patients do not come to visit healthcare professionals in the early phases of the disease and mostly relied on self-diagnosis and self-medication.

"Patients visit a doctor, a pharmacist or a healthcare professional only if they develop serious health complications. Only 10%-15% people visit a healthcare center to treat minor problems; the rest come only after their health condition is considerably worsened. For example, a headache can be a symptom of hypertension, but people take paracetamol or a combination of paracetamol and ibuprofen for ten days by themselves. Almost everyone is a doctor and/ or pharmacist; self-diagnosis and self-medication is so common. Here, patients don't even report what they are experiencing; they directly demand certain medicines from pharmacies. Since patients come late to the healthcare facility, the situation (i.e. their health condition) becomes worse" (P-9).

Two participants (P-3 and P-9) said that private hospitals had initiated some services (e.g., full body check-up, blood pressure and glucose monitoring), but noted that such programs are not affordable for most Nepalese. Everyone agreed there are inadequate facilities to diagnose cancer at many health centres including district hospitals, and said these patients are generally referred to specialised cancer centres.

NCD Prevention and Treatment

There are limited health promotion activities at the population level that focus on detecting NCDs or dietary and lifestyle modifications. At the individual level, healthcare professionals advise their patients about these topics but without mass education, it is difficult to change the attitudes of people about improving their diet and lifestyle.

"Health professionals counsel the patients with NCDs or people at high risk of developing NCDs to give up habits like smoking and drinking as these habits exacerbate the health conditions. They also advise patients to modify their lifestyle including diet and exercise. Lifestyle modification can minimise the risk of chronic diseases, but the patients are rarely convinced and are not ready to changes; rather they stick to their addictions. It's not only the health professionals, but I think it is our social responsibility to make patients aware and to lift the health status of general people". (P-2)

One participant suggested a way to promote NCD health in the existing healthcare system.

"...there are different ways... We can involve female community health volunteers at rural communities, mobilise local leaders to disseminate the knowledge or at least gather people for awareness programs. Teachers can play important roles by teaching their students about preventive measures of NCDs..." (P-1).

There has been inadequate effort to managing NCDs, especially in the government sector. All practitioners in public facilities urged the government to develop infrastructure and build capacity in order to appropriately treat patients visiting government facilities. They acknowledged some recent efforts by the government to provide free primary healthcare services including medicines but said there are limitations, highlighted by this statement.

"The government of Nepal presently distributes 25 medicines free of cost at health posts. A couple of them are antihypertensive medicines. We have no choice but to refer them to private pharmacies if they had been prescribed with other medicines in the past. If they are first diagnosed here, we will go with the free medicines available here". (P- 1).

Patients need to pay a lot of money to treat their condition(s), especially in private pharmacies, so they may be reluctant to either start or adhere to their treatment regimen. One participant highlighted unaffordability as the main reason why patients are reluctant to take medicines.

"...some medicines like amlodipine cost 70 rupees and above per strip [usually tablets/capsules in Nepal as packaged as 10 tablet/ capsules per strip] and medicines for lowering blood cholesterol cost 120 rupees and above per strip. Patients with low economic status have to spend a large part of what they earn; this might be the reason for their reluctance to take medicines." (P- 5).

NCD Follow Up

Most participants said that patients do not usually come for follow-up visits because visiting a doctor is unaffordable.

"...patients coming from remote areas are reluctant to visit doctors as they want to save the 500 rupees for the check-up. They are also scared of the cost of laboratory investigations which can be 300 to 4,000 rupees in many cases..." (P-9).

In addition, most participants said that patients are not given enough information about the importance of follow-up visits. Patients will visit pharmacies and buy medicines with the same prescription for a long period without a follow-up with the doctor. Both pharmacists and pharmacy assistants agreed that it is common to dispense medicines from legally expired prescriptions.

Response of the Healthcare System to the Rising Burden of NCDs

Most participants did not know about the government's response to the increasing burden of NCDs. They said the healthcare system should be improved in order to respond to the burden.

"Definitely, communicable diseases were getting undivided attention in past years from the government sector but gradually there has been a shift in focus as the growth of non-communicable diseases is exponential today. The government increased the tax for tobacco and alcohol and has banned their advertising in the public media. But I have to admit that the substantial strategies and plans to cope with the increasing burden of non-communicable diseases from the government sector is still lacking"- Participant P-2.

DISCUSSION

NCDs are a major healthcare problem in Nepal [1,3]. The healthcare system in Nepal is currently focused on the provision of acute care to patients with communicable diseases which generally involves diagnosis, treatment and discharge of patients to the community [18]. The healthcare needs of people with NCDs require a different approach as they need treatment for a long period and cannot usually be discharged from the treatment plan [19]. This study explored the perspectives of healthcare providers about the use of healthcare services by people with NCD and their perceptions about the response of the healthcare system to the increasing burden of NCDs. These healthcare professionals were aware of the increasing

burden of NCDs in Nepal. They knew about the four major NCDs which contribute the most to the NCD burden: cardiovascular diseases, cancers, chronic respiratory diseases and diabetes. They attributed the increased burden of NCDs to risk factors such as unhealthy diet and sedentary lifestyles. These two risk factors along with tobacco use and harmful consumption of alcohol are risk factors for NCDs [1,20]. Their opinion was supported by the fact that the GBD study had shown the rise in the proportion of NCD deaths from 51% to 60% between 2010 and 2014 in Nepal [8].

Most participants reported that there is a lack of NCD screening programs in Nepal. Studies in other countries found that the cost to treat NCDs is substantially higher than the cost to prevent them [21-23], so the lack of NCD screening programs could ultimately be costly for Nepal. While most patients with NCDs are diagnosed opportunistically, it would be better to have some formal screening strategies. Targeting the modifiable risk factors and identifying NCDs earlier can significantly reduce morbidity and mortality, eventually decreasing the burden of NCDs and promoting the health of the population [23]. Many expensive and advanced NCD screening tools such as pulmonary function tests, mammography and prostate specific gene screening are likely not feasible in Nepal. Cost-effective screening and diagnostic procedures, which can be performed in primary care include those for CVD (blood pressure, blood glucose level, lipid levels and tobacco use); and cancer (faecal occult blood testing for colorectal cancer, and self-examination practice and clinical breast examination for breast cancer) [22].

Based on the opinions of the participants, the first point of care for patients with NCDs is either a government healthcare facility (e.g., sub-health post, health post or primary healthcare centre) or a private pharmacy. This finding is similar to those from previous studies which showed that such facilities are the first point of care for patients with any disease in Nepal [24,25]. Therefore, healthcare professionals working in government healthcare facilities and pharmacists plus assistant pharmacists working in private pharmacies should be trained to perform basic diagnostic tests. A regulatory framework would promote the provision of screening services for the people at higher risks of NCDs. Furthermore, NCD screening programs should be conducted periodically in much the same way as, say, the national polio immunisation program, which immunises children under five years during a national polio day. Outreach vaccination services are provided through Female Community Health Volunteers (FCHVs) in a school, busy public place or door-to-door visits [26]. More than 90% of children under five are immunised with polio vaccine and polio has been eradicated in Nepal. NCD screening and diagnostic services could be similarly provided through existing government healthcare facilities (i.e., sub health posts, health posts or primary healthcare centres) and private pharmacies. One participant suggested FCHVs could assist in screening programs as a way to include NCD health promotion activities in the existing healthcare system of Nepal. Similarly, one of the underutilised health workforce, particularly pharmacists, can also be used to prevent and manage NCDs in Nepal. They can potentially contribute by providing screening and monitoring services, lifestyle modification counselling, medication therapy management, and health promotion activities [27].

Modifiable risk factors (i.e., tobacco use, foods high in saturated and trans fats, salt, and sugar especially in sweetened drinks, physical inactivity, and the harmful consumption of alcohol) cause more than two-thirds of all new cases of NCDs and increase the risk of complications in people with NCDs [28]. The participants suggested that there have been few actions to address these risk factors at the population level. Participants recognised that the government has introduced tobacco control initiatives such as: prohibited smoking in public places, on public transport and in workplaces; banned on all forms of tobacco advertisement, promotion and sponsorship; required pictorial health warnings on tobacco products; established

a tobacco control and regulatory committee; and established a health tax fund [29]. The participants confirmed there has been little effort to educate the population about healthy eating and lifestyles and they suggested that the mass media could be used to raise awareness of NCD issues [30,31].

Some people have biological risk factors for NCDs such as hypertension, and high blood glucose and cholesterol levels [1,20,32]. Medicines are often prescribed to manage these conditions [33]. Government healthcare facilities provide medicines for free but participants mentioned they do not have a wide range of medicines to treat either the risk factors or diagnosed NCDs. Therefore, people mostly rely on private pharmacies to purchase medicines and pay themselves. The patients need to pay for a doctor's visit and laboratory tests so this makes the treatment and follow up unaffordable for many patients seeking services in the private sector. To improve this situation, the government could plan to effectively implement universal health coverage in the public sector and introduce health insurance to subsidise the costs of medicines and services in the private sector.

The participants noted there have been few efforts by the government to address NCDs. They were unaware of the multi-sectoral action plan (2014-2020) to prevent and control NCDs recently developed and published by the Ministry of Health [34,35]. The plan will be implemented in three phases [35]. Phase I covers until the end of 2016 and consists of restructuring high level committees, initiating a functional effective NCD unit or department, planning and implementing pilot interventions, streamlining procurement and supply systems, improving and incorporating national health information systems and completing a baseline information system. Phase II (2017-2020) will focus on scaling up Phase I interventions, building capacity in institutions, and developing human resources, media campaigns and communications. Phase III will start towards the end of 2019 to plan for the second NCD action plan and targets for 2025.

This is the first study exploring the use of healthcare services by patients with NCDs in Nepal as described by a variety of healthcare providers. This study responds to the recent call for more empirical research to understand the health service utilisation by patients with NCDs in low- and middle- income countries [36,37]. Our findings and recommendations from this study should be considered within some limitations. The study was conducted with nine participants from one district in Nepal. While focusing on participants from different educational and professional backgrounds enabled us to gain a more in-depth understanding, we recognise that we cannot necessarily generalise the findings to the entire country. Nonetheless, we can glean important lessons from our findings about how patients with NCDs access healthcare services and whether the healthcare system of Nepal is prepared to address the increasing burden of NCDs. In addition to healthcare providers' perspectives; we recommend future research to evaluate the use of healthcare services by patients with NCDs in Nepal from different perspectives. For example, one could consider the patients or community, health policy makers and representatives from non-government organisations working in the area of public health. These studies would further contribute to our understanding of the use of healthcare services by patients with NCDs in Nepal in order to improve service delivery and health outcomes.

CONCLUSION

We explored how healthcare services are used by patients with NCDs from the perspective of healthcare providers. NCDs are often diagnosed late and opportunistically. Government healthcare facilities (e.g., sub- health posts, health posts and primary healthcare centres) and private pharmacies are the first points of care for many patients. The cost of treating and managing NCDs is unaffordable for many people. There is an opportunity to provide specific NCD

screening and management programs in primary healthcare facilities and pharmacies. Our study adds to the limited literature on the way people with NCDs access healthcare services in Nepal. We advocate for further studies in this area; for instance, mapping the patients with NCDs journey.

AUTHORS' CONTRIBUTION

SK, LV, LN and SH conceived and designed the study. SK supervised data collection. SK and SH synthesised and analyse data. SK drafted the manuscript. LV, LN and SH reviewed the drafts of the manuscript. The final manuscript has been read and approved by all the authors.

DECLARATION

We would like to declare that this study was self-funded. All authors would like to declare that they do not have any conflict of interest associated with this study.

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REFERENCES

- [1] Alwan A. Global status report on noncommunicable diseases 2010: World Health Organization; 2011.
- [2] The World Bank Group. Country at a glance: Nepal Washington DC2014 [Available from: <http://www.worldbank.org/en/country/nepal>].
- [3] Neupane D, Kallestrup P. Non-communicable diseases in Nepal: challenges and opportunities. *Journal of Nepal Health Research Council*. 2013;11(24):225-28.
- [4] Central Bureau of Statistics - Government of Nepal, cartographer Population Atlas 2014. Kathmandu 2014.
- [5] Government of Nepal - Office of the Investment Board. Health Kathmandu. 2016 [Available from: <http://ibn.gov.np/health>].
- [6] Witter S, Khadka S, Nath H, Tiwari S. The national free delivery policy in Nepal: early evidence of its effects on health facilities. *Health policy and planning*. 2011;26(suppl 2):ii84-ii91.
- [7] KC B, Heydon S, Norris P. Access to and quality use of non-communicable diseases medicines in Nepal. *Journal of Pharmaceutical Policy and Practice*. 2015;8(1):1-4.
- [8] Aryal KK, Mehata S, Neupane S, Vaidya A, Dhimal M, Dhakal P, et al. The burden and determinants of non communicable diseases risk factors in Nepal: findings from a nationwide STEPS survey. *PLoS one*. 2015;10(8):e0134834.
- [9] Karkee R, Kadariya J. Choice of health-care facility after introduction of free essential health services in Nepal. *WHO South-East Asia Journal of Public Health*. 2013;2(2):96.
- [10] Sandelowski M. Sample size in qualitative research. *Research in nursing & health*. 1995;18(2):179-83.
- [11] Elo S, Kyngäs H. The qualitative content analysis process. *Journal of advanced nursing*. 2008;62(1):107-15.
- [12] Hsieh H-F, Shannon SE. Three approaches to qualitative content analysis. *Qualitative health research*. 2005;15(9):1277-88.
- [13] Anderson TJ, Grégoire J, Hegele RA, Couture P, Mancini GJ, McPherson R, et al. 2012 update of the Canadian Cardiovascular Society guidelines for the diagnosis and treatment of dyslipidemia for the prevention of cardiovascular disease in the adult. *Canadian Journal of Cardiology*. 2013;29(2):151-67.
- [14] Kengne AP, Sobngwi E, Echouffo-Tcheugui J-B, Mbanya J-C. New insights on diabetes mellitus and obesity in Africa-Part 2: prevention, screening and economic burden. *Heart*. 2013;99(15):1072-77.
- [15] Kilic B, Kalaca S, Unal B, Phillimore P, Zaman S. Health policy analysis for prevention and control of cardiovascular diseases and diabetes mellitus in Turkey. *International Journal of Public Health*. 2015;60(1):47-53.
- [16] Surawicz CM, Brandt LJ, Binion DG, Ananthakrishnan AN, Curry SR, Gilligan PH, et al. Guidelines for diagnosis, treatment, and prevention of *Clostridium difficile* infections. *The American Journal of Gastroenterology*. 2013;108(4):478-98.
- [17] World Health Organization. Report of the Formal Meeting of Member States to Conclude the Work on the Comprehensive Global Monitoring Framework, Including Indicators and a Set of Voluntary Global Targets for the Prevention and Control of Non-Communicable Diseases. Geneva: WHO. 2012.
- [18] Gurung G, Derrett S, Hill PC, Gauld R. Governance challenges in the Nepalese primary health care system: time to focus on greater community engagement? *The International Journal of Health Planning and Management*. 2015.
- [19] Atun R, Jaffar S, Nishtar S, Knaul FM, Barreto ML, Nyirenda M, et al. Improving responsiveness of health systems to non-communicable diseases. *The Lancet*. 2013;381(9867):690-97.
- [20] World Health Organization. Global health risks: mortality and burden of disease attributable to selected major risks: World Health Organization; 2009.
- [21] Abegunde DO, Mathers CD, Adam T, Ortegon M, Strong K. The burden and costs of chronic diseases in low-income and middle-income countries. *The Lancet*. 2007;370(9603):1929-38.
- [22] Sazlina S. Health screening for older people—what are the current recommendations? *Malaysian family physician: the official journal of the Academy of Family Physicians of Malaysia*. 2015;10(1):2.
- [23] Siu AL. Screening for abnormal blood glucose and type 2 diabetes mellitus: us preventive services task force recommendation statement. *Annals of Internal Medicine*. 2015;163(11):861-68.
- [24] Kafle KK, Madden JM, Shrestha AD, Karkee SB, Das PL, Pradhan YM, et al. Can licensed drug sellers contribute to safe motherhood? A survey of the treatment of pregnancy-related anaemia in Nepal. *Social Science & Medicine*. 1996;42(11):1577-88.
- [25] Shankar P, Partha P, Shenoy N. Self-medication and non-doctor prescription practices in Pokhara valley, Western Nepal: a questionnaire-based study. *BMC family practice*. 2002;3(1):1.
- [26] Devkota S, Panda B. Childhood immunization and access to health care evidence from nepal. *Asia-Pacific Journal of Public Health*. 2016;28(2):167-67.
- [27] Khanal S, Nissen L, Veerman L, Hollingworth S. Pharmacy workforce to prevent and manage non-communicable diseases in developing nations: The case of Nepal. *Research in social & administrative pharmacy: RSAP*. 2016;12(4):655-59.
- [28] Lim SS, Vos T, Flaxman AD, Danaei G, Shibuya K, Adair-Rohani H, et al. A comparative risk assessment of burden of disease and injury attributable to 67 risk factors and risk factor clusters in 21 regions, 1990–2010: a systematic analysis for the Global Burden of Disease Study 2010. *The Lancet*. 2013;380(9859):2224-60.
- [29] World Health Organization. Monitoring tobacco control among youth in countries of the South-East Asia Region: 2014. 2015.
- [30] Juliet A, Vijver S, Graft Atkins Ad, Agyemang C. 8 Community-based Interventions for Preventing Chronic Non-communicable diseases in Low-and Middle-income Countries. *Chronic Non-communicable Diseases in Low and Middle-income Countries*. 2015:141.
- [31] McGill R, Anwar E, Orton L, Bromley H, Lloyd-Williams F, O'Flaherty M, et al. Are interventions to promote healthy eating equally effective for all? Systematic review of socioeconomic inequalities in impact. *BMC Public Health*. 2015;15(1):1.
- [32] World Health Organization. Global status report on non communicable diseases 2010: World Health Organization; 2011.
- [33] World Health Organization. Package of essential noncommunicable (PEN) disease interventions for primary health care in low-resource settings. 2010.
- [34] Ministry of Health and Population- Government of Nepal. Integrated Non-Communicable Diseases (NCDs) Prevention and Control Policy of Nepal (Draft) Kathmandu- Nepal2012 [Available from: http://moHP.gov.np/english/files/new_publications/9-4-Integrated-Non-communicable-Disease-Prevention-and-co%281%29.pdf].
- [35] Ministry of Population and Health- Government of Nepal, World Health Organization-Country Office for Nepal. Multisectoral Action Plan for the Prevention and Control of Non Communicable Diseases (2014-2020). Kathmandu; 2014.
- [36] Adeyi O, Smith O, Robles S. Public policy and the challenge of chronic non-communicable diseases: World Bank Publications; 2007.
- [37] Ebrahim S, Pearce N, Smeeth L, Casas JP, Jaffar S, Piot P. Tackling non-communicable diseases in low-and middle-income countries: is the evidence from high-income countries all we need? *PLoS Med*. 2013;10(1):e1001377.

PARTICULARS OF CONTRIBUTORS:

1. Consultant and International Relation Officer, Global Health Initiative, Sankalpa Foundation, Kaski, Pokhara, Nepal; PhD Student, School of Pharmacy, The University of Queensland, Woolloongabba, Australia.
2. Senior Research Fellow, The Cancer Council NSW, Sydney, Australia; Honorary Senior Fellow, School of Public Health, The University of Queensland, Herston, Australia.
3. Professor and Head, School of Clinical Sciences, Queensland University of Technology, Brisbane, Australia.
4. Senior Lecturer, School of Pharmacy, The University of Queensland, Woolloongabba, Australia.

NAME, ADDRESS, E-MAIL ID OF THE CORRESPONDING AUTHOR:

Mr. Saval Khanal,
Sankalpa Foundation (Pvt) Ltd, Ratna Chowk, Pokhara, Kaski, Nepal.
E-mail: khanalsaval@gmail.com

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