

Assessment of Knowledge, Beliefs and Attitudes towards Healthy Diet among Mothers in Kaski, Nepal

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Abstract

The study aims to assess the knowledge, attitudes and beliefs about nutritious food mothers in Kaski district in Nepal whose children are aged 3 to 5. A cross-sectional and community-based survey method was used during the study. Both urban and rural mothers lacked knowledge of what food is nutritious or not whilst their attitudes and views appear ill informed. Mothers from both rural and urban communities have high faith in traditional healers. Thus this study suggests that a different approach was needed because the public health problems are associated with behaviour. Thus, special attention should be paid on appropriate intervention of under-nutrition in poor communities like this.

Key Words: Healthy diet; knowledge; attitudes; childhood; under-nutrition; stunting.

1. Introduction

Under-nutrition at an early age leads to a drop in mental and physical growth during childhood; it disturbs school performance and leads to lower income in later life. Nepal has some of the highest under-nutrition rates in the world with 11 per cent of under-fives wasted, 29 per cent underweight and 41 per cent stunted. The more remote hill and mountain regions have a very high prevalence of stunting which is above 60 per cent (NDHS, 2011).

GDP (gross domestic product) per person

in Nepal (US\$1,049 P/A) is very low, i.e. less than US\$3 per person per day (World Bank, 2013). Farm production does not keep up with population growth as 33 districts out of 75 have food deficits; hence 4.5 million Nepalese are undernourished. The WFP (World Food Programme) stated that most of the households living below the poverty line, have squeezed the amount of meal and stay without food during farm lean times (Fisher and Slaney 2013), hence nearly 70 per cent of children are poorly fed. Thus the children have physical and mental stunting and remain unhealthy

for life with lowered productivity (WFP 2013; Murphy and Girot 2013). Much of the problem of deaths of children resulting from under-nutrition, estimated to be over half of childhood deaths in low-income countries, can be attributed to just mild and moderate under-nutrition, varying from 45 per cent for deaths due to measles to 61 per cent for deaths due to diarrhoea [de Onis, 2004]. Most studies on child nutritional status have focused on prevalence of under-nutrition among under-five children and socio-economic, demographic and cultural factors associated with child under-nutrition in Nepal (Reed, 1996).

Global scenario of poor nutrition and underlying cause

Malnutrition refers to deficiencies of micronutrients, under-nutrition, and obesity. This paper focuses particularly on under-nutrition. Malnutrition remains one of the most common causes of morbidity and mortality among children under five children throughout the World (UNICEF, 2005). Internationally, more than 10 million children under five die every year from avoidable illnesses despite effective health interventions and half of the deaths are due to malnutrition. Generally malnourished children are more vulnerable with weak health (Caulfield, 2004). Under-nutrition is very high in South Asia even compared to Africa (de Onis, 2000).

Between 1990 and 2006 child stunting in Southeast Asia has dropped from 52 per cent to 42 per cent. One study in Bangladesh found high prevalence rate of underweight (40%) and stunting (42%) in children under five (Siddiqui, 2011). Research in Mongolia and Dhankuta of Nepal also found high prevalence rates of under-nutrition which were 15.6 per

cent stunting, 1.7 per cent wasting and 4.7 per cent underweight and 27 per cent stunting, 37 per cent wasting and 11 per cent underweight respectively (Otgonjargal,2012; Sapkota,2009).

In the developing world, the major factors of under-nutrition are multifaceted and interlinked and include: low diet and infections, access to health facilities, food security, sanitation and healthy environment and child feeding/caring practices (Acharya et al.2015) which are influenced by family socio-economic circumstances (Müller, 2005). According to a study in Bangladesh the BMI (Body Mass Index) of mothers, pre and postnatal visits, age of mothers, education of parents and family economic status are all major factors of under-five child malnutrition (Siddiqi 2011; Murphy 2011). No link was found with social class and source of drinking water (Sapkota 2009). A study conducted in Dhankuta, explored that low socio-economic status of households were high risk determinants for underweight and stunting, on the other hand, children from educated and joint households were found less likely to be stunted than those in nuclear households. It has seen that caste or ethnic group and mother's age at child gestation have an important link with stunting but it was not linked with the education level of mothers (Sapkota, 2009).

In regards to association with socio-economic status and malnutrition, a study conducted in rural area of Gumbrit had found that household income was strongly associated with malnutrition (Edris 2006). Under-nutrition is strongly associated with social class, as well as ecological and economical determinants which differ from nation to nation (Ellahi 2014).

The significant linked determinants of poor nutrition comprises of household income, level of education, parents status in terms of nutrition, access to safe drinking water, sanitation, primary health care facility access as well as child's age and gender (Vijayaraghaven et al. 1990). These contributing factors of under-nutrition may vary between communities, regions and countries over time. Presented literature showed that factors such as child caring, knowledge of health practice, parent's education level, age of child, birth weight of children, lack of decision making mainly on spending of money, and lack of cattle effect on family and community strongly affects the level which the child develops (Zewdu, 2012; Murphy 2011).

Regional assessment of United Nation's Standing Committee on Nutrition revealed that condition of stunting (32%) and underweight (40%) in Nepal which exceeded the average prevalence rate in South Central Asia (UN/SCN, 2010). NHDS (2011) report showed progress on child nutritional status with underweight reduced to 29 per cent and stunting to 41 per cent (NDHS, 2011). In Nepal maternal under-nutrition is also a major alarm. According to NDHS (2011) that one-fifth of women ages 15 -49 are underweight (less than 18.5 BMI). However, this also has been progressing to a lesser degree. Similarly, NHDS 2011 reported that prevalence rates of anaemia in children (46%) and women (35%) are a major health problem in Nepal. However, child and maternal under-nutrition is a serious concern that urgently requires targeted, effective interventions to tackle these issues (Acharya 2015).

Scenario of nutritional problems in South Asia and Nepal

Stunting still remains a main challenge in South Asia. This region accounts about 40 per cent of the global burden of child stunting in the world (WHO, 2014). The stunting prevalence of under five years aged children in South Asia has reduced from nearly 61 per cent to 38 per cent between 1990 and 2012 (UNICEF, 2014).

The Nepal Demographic and Health Survey in 2011 showed that prevalence of under-nutrition was 11 per cent wasting, 41 per cent stunting and 29 per cent underweight with some but not much improvement between 2006 and 2011. Similarly, the women aged between 15-49 years have a fairly high prevalence of anaemia (35%), and more in rural (36%) than in urban (28%) areas of the country. Rural women (36%) are more affected which compare to national level (35%) in prevalence of anaemia. Rural prevalence is equal to urban which indicates that public health intervention on nutrition must focus in both parts of the country (NDHS, 2011).

2. Objectives

The study aims to address two aims: first to assess the level of knowledge, attitudes and beliefs about food recommendation for preschool aged children amongst rural/urban mothers; and secondly, establish major barriers amongst mothers to feeding their offspring healthy food.

3. Methodology

A cross-sectional, community-based survey of 524 mothers in *Kaski* district of Nepal among children aged 36-60 months who were no longer breastfed

at the time. The questionnaire included: socio-demographic measurements, knowledge, beliefs and attitudes about nutritious food, as well as child feeding patterns, food recommendation, major barriers, food insecurity and health-seeking behaviours. Data were added to a computer data base and analysed using SPSS.

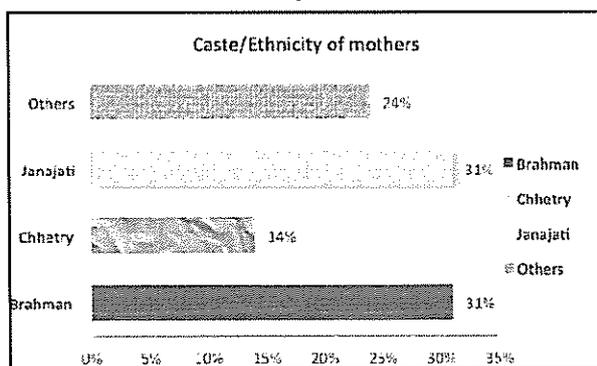
Study Location: Pokhara Sub-Metropolitan City, ward no.1, 6, 8, 15 and 17, Lekhnath Municipality, ward no. 2, 8, 14, 15, and 16 of *Kaski* district, Nepal. The study received ethical approval from the Nepal Health Research Council & Bournemouth University.

4. Findings of the Study

- Ethnicity and Caste

Graph 1 explains the quantitative information about caste or ethnicity of the mothers who represented in the study. The study shows 31% mothers belong to high caste *Brahman* and *Janajati* and only 24% mothers were belong to Dalits and *Madhesi* communities.

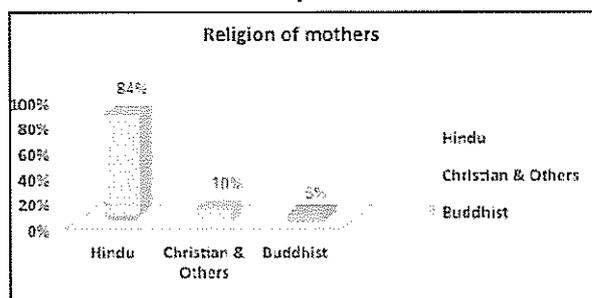
Graph 1.



- Religion of the Mothers

The study reveals that most of the mothers were Hindu (84%) and 6% mothers was Buddhist, 11% were Christians & others including Muslim (Graph 2).

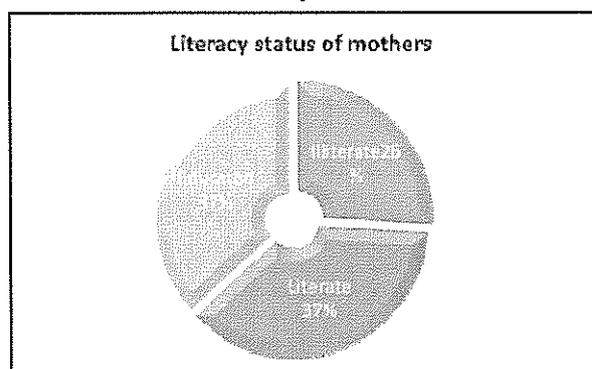
Graph 2.



- Literacy Status

According to study around 26 per cent participants have found illiterate whereas 74 per cent participants found literate and educated in the study area (Graph 3).

Graph 3.



- Major barriers to recommending nutritious foods included: lack of knowledge (19%); high market prices (21%); and cultural influences or beliefs (7%).

- Around 55 per cent children were providing fruits once in week. Similarly 29 per cent of families never given fruits and 19 per cent tiff in with salad to their children.

- Around 19 per cent of mothers could not choose nutritious food from the grocery store.

- About 12 per cent respondents have lacked food, 68 per cent lacked the food in June July & August, 13 per

cent in December, January & February and 9 per cent in March, April & May respectively.

- Nearly 57 per cent children had been taken at least once to a faith healer and 16 per cent on multiple occasions for the treatment.
- About 20 per cent of mother believed that eating green leafy vegetables and fruits during illness affect child health negatively.
- Nearly 8 per cent respondent feed dairy product and meat items at a same time to their children whereas 92 per cent did not practice.
- Almost 19 per cent mothers of the community believed that feeding of green leafy vegetables and fruits during the illness period caused harm to child and only 10 per cent mothers had no knowledge about it.
- Around 11 per cent children have fed one-two times, and 79 per cent fed three - four times a day respectively whereas nearly ten percent child fed nothing in last 24 hours.
- The study revealed that 65 per cent mothers, 6 per cent father, 14 per cent grandparents and 16 per cent others were responsible to taking care of children respectively.
- The study have found that 66 per cent mothers, 5 per cent fathers, 18 per cent grandparents and 11 per cent others were responsible to feed their children.

Nepal has diverse scenario which makes various socio-cultural aspects such as culture, religion, caste /ethnicity, and language (Bhattachan, 2009). The

majority of the people are Hindu (NDHS, 2011). The official language is Nepali but there are more than 92 different languages spoken across the country. There are more than 103 different castes/ethnic groups all over the country (WHO Country Cooperation Strategy 2006 -2011). There is a strongly embedded caste system which describes the social stratification by ethnicity. Even though it is officially banned, there are social differences related to caste and ethnicity (Bennett 2005).

This study has found that nearly 42 per cent mothers have no or poor knowledge on sign and symptoms of under-nutrition. Most of them reported that they are unaware (Murphy, 2011) that the children presenting the following signs and symptoms are correlated with under-nutrition: crying, irritating, quarrelling, not sleeping, diarrhoea & vomiting, low weight, lean and thin, short in height and slow in growth, poor appetite, looking as ill health, and rough or dry skin.

The lack of knowledge on wellbeing and health safety along with nutritious food and health services uptake in Nepal include traditional supporters and their status in the society (Acharya et al., 2014). The misbelieves are strongly embedded in the poor and underserved community as well as in some part of urban area because of migration due to decade long conflict in the country. The Spiritual and Traditional supporters or advocators usually are Hindu, as the proportion is 87 per cent of the population (Tamang and Broom, 2010). In rural part of Nepal, many traditional beliefs still exist, for example, leprosy is believed to be caused by sin in one's past life or

to be a curse from God (Acharya, 2012). The poor community strongly trusts traditional healers and however they have first choice is spiritual/traditional healers in case of minor health issues. The priest, illiterate household, traditional healer and elderly relatives still have high levels of trust which is still influencing by them in the society (Acharya, 2012).

Almost the whole of the Nepali society is using the traditional medicine as the first step of health care and they go to traditional or spiritual healers with any health problems (Tamang and Broom, 2010). One key problem is the poor decision making by family members in urban or rural areas due to the lack of recognition of complications of any ailments (Moestue, 2008). However, there is a lack of knowledge (Murphy, 2011) on health care issues in Nepalese society.

The study revealed that majority of respondents (57%) had more than six members living together. Similarly, 35 per cent had less than six and nearly 8 per cent households living with less than four family members. As the context of Nepalese society, mainly in Hindu culture, the family structure is called extended family, that consisted of the immediate family, which involves grandparents as well as close relatives such as aunts, uncles and cousins who all live together in the same dwelling. This family structure might change from immediate to extended household (Andersen, 2007). Big family size leads to poor nutrition status of children. The children from poor and disadvantaged group (Thomas et al. 2011) are more vulnerable of poor nutrition. This might

be difference due to study period, health service delivery, locality of the study, socio-economic characteristics, occupation and age. Most of the children are taken into work in places such as farming fields, construction sites, and factories by their parents if there is no-one available to look after them at home.

Mainly the level of knowledge on nutritious food and poverty are the major barriers seen in the field of nutrition that are associated with food security, food prices, and income trends of households (Acharya 1981). Poverty, caste, gender and social inequalities and conflict are regarded as secondary barriers for the nutritional problems in Nepal (Bishwakarma 2008, 2009; Adhikari, 2010). The ten-year conflict in Nepal has increasingly centralised systems, disrupted the development of rural areas and badly affected health services (Devkota & van Teijlingen, 2010). Although the risks involved in lack of transport, high service cost, long distances, full trust on traditional healers because they are easily available and affordable for poor people, insufficient health resources, and lack of capacity to treat serious problems at the nearby primary health care service centres (Adhikari, 2010). At the same time, the country is on the way to accomplish the MDGs 4 and 5 targets (DFID, 2009).

The ethnic or traditional beliefs concerning to contamination of food and social values and norms in which rural women are not preferred because of their low rank have negative significances on the foods of women particularly by reducing their intake of desired, rich of micronutrient food such as meat items,

dairy products and vegetables (Gittelsohn et al., 1997). This type of traditional beliefs and manners could have a mostly negative influence on pregnant women given the intensified functional needs for various micronutrients. Thus, ethnic beliefs and practices that impact women's nutritional eating during pregnancy have significant insinuations for both micronutrients and macronutrient lacks among pregnant women in Nepal.

Beliefs about the 'hot or cold' quality of food and their effects, on the health of human, are likewise widespread in the world, and have a strong impact on eating manners during illness, pregnancy, and lactation and (Ferro-Luzzi, 1980). Most of the South Asian region, these body states are supposed to be principally sensitive to the hot or cold merits of food and depending on an individual's physical state, hot or cold foods are believed to have either a negative or positive effect on the human body (Bryant et al., 2003)

Often, it has been recommended that the sense of women is in fact having a big baby will result in increased labour risk, among women with short build in the context of south Asian region (Rush, 2000).

In various countries across the globe, pregnant women have been observed to reduce food intake during pregnancy, a behaviour generally referred to in the literature as poor eating behaviour (eating down) (Karim et al., 2003). It is reported that the causes of poor eating behaviours in South Asian contexts, where the behaviour is hypothetically general, were connected to fears that having a large baby could lead to more difficult deliveries. Nichter (1983) revealed

beliefs about food intake behaviour of pregnant women in India where food taken by pregnant women fills up the stomach space available for the foetus, therefore women often eat less in order to the foetus to thrive in the limited shared space.

The food beliefs in South Asia relate to *Ayurvedic* medicine and religion (Hill 1990; Nagpal, 2003). According to food beliefs of *Ayurveda*, wherein whole foods have been classified into hot and cold, is profoundly embedded in the epistemological grounds of many cultures and can provide a theoretical framework for expressing the complex links between diet and health (Beardsworth, 1997). These hot and cold beliefs are held by many people in South Asia (Subedi, 2010). This perception is believed to come from Hindu or *Ayurvedic* ideals and has been influential in medical practices (Nagpal, 2003). This belief system is complex and does not reflect that ideal by dominant Western scientific medicine which generally prescribes to evidence based medicine and classifies food into groups representing the main micronutrient composition such as protein, fat, alcohol and carbohydrate (Nichter, 1989). Adherence to these beliefs also tends to be stronger in the rural community of Nepal and among the disadvantaged and illiterate (Fieldhouse, 1995). During these days, food beliefs regarding hot and cold is vary between locality and ethnic groups as well as regions and countries. In general use of the hot and cold food categorise scheme avoid in the locality, through like general the use of the hot and cold food categorise scheme avoid in the community, though

likely to differ between persons due to variances in understanding and economic capitals, may mean that conventional nutritional counselling is ineffective among those who follow this beliefs and reject scientific values, at least those in relation to food choice (Fieldhouse 1995; Singh, 1991). The rejection of recommendations therefore, may not be due to persons not wanting to make changes but somewhat the recommendations not being compatible with their beliefs so health workers would not to know lay ideologies and adapt their techniques accordingly (Fieldhouse, 1995).

Beliefs about Breastfeeding and colostrums

It has been observed that some women of the Nepalese communities, mainly from the rural locality and non-educated background, do not breastfeed on the day of child birth and even second day which is common in South Asia (Darmstadt, 2006). They stimulate their breasts and squeeze out the colostrums (Bandyopadhyay, 2009). In terms of breastfeeding rates, it is high in Nepal if it compared with England rates at six months and six weeks.

This study found that nearly 20 per cent of the mothers explored negative perceptions such as becoming weak, breast shrinkage and even breast cancer development, all in regards to regular and excessive breastfeeding to children. Similarly, 16 per cent mothers had negative perceptions about feeding of colostrums such it form pus, dirty materials and bad smells, do not feed without squeezing. At the same time 71 per cent had positive perceptions about

the feeding to colostrums such as it is good for child health, pious, and highly nutritious substance and compulsorily feed to new born (Acharya et al., 2014).

A key indicator of chronic under-nutrition is stunting - when children are too short for their age group compared to the WHO growth standards. About 178 million children globally are stunted, resulting from not enough food, a vitamin and mineral-poor diet, and disease. As growth slows down, brain development lags and stunted children learn poorly (Sapkota, 2009). Stunting rates among children are highest in Africa and Asia. In south-central Asia 41 per cent has affected.

Good nutrition during pregnancy ensures a healthier baby. WHO recommends exclusive breastfeeding for six months, introducing age-appropriate and safe complementary foods at six months, and continuing breastfeeding for up to two years or beyond (Riordan and Hoover 2005).

In regards to observation of construction materials for the building of residents, this compulsorily observed during the interview within the urban or rural area. In regards to use of construction materials of the houses, sources of safe drinking water and use of cooking fuels, sanitation, drinking water purification, ownership of land, family size, income of the household were measured as a compilation indicator of household prosperity and assets (Rutstein and Johnson, 2004). However, in Nepal poverty, education, sanitation and safe drinking water are associated with child under-nutrition. Educational status is included as a separate variable in analyses since it is not a component of

the wealth index. The population wealth quintiles and education offer a measure of socioeconomic status.

There are several impacts of food selections with age, gender, and social class along with ethnicity, attitudes, culture, and composition of household and deeply rooted beliefs mainly in Nepal including South Asian Region (Ellahi, 2014). In terms of inequalities, the people that belong to educated and advanced socio-economic groups tend to have good diet. This may be due to be better capable in conceptualizing the association between health and nutrition (Cox & Anderson, 2004) but the reality that the group with higher incomes are able to pay for nutritionally balanced and high quality foods (Cox & Anderson, 2004). Nutritious foods such as meat items, dairy products, fruits and green vegetables often cost more than low quality or cheap foods. The cheap or low quality foods can be lower in important nutrients (James et al., 1997). Poor income groups may also be limited in their capacity to purchase nutritious diets due insufficient access, physically and micro-financial subjects which effect in only the necessary basics purchased and the related social variables such as religion that has one of the most powerful roles in the selections and following selection of diets (Dindyal, 2004).

5. Conclusion and Recommendations

Knowledge and attitudes towards nutritious food of rural and urban mothers are still poor. Beliefs about food practices are still strongly embedded as they are elsewhere in Nepal. Urban mothers had better food recommendation, whereas

rural mothers experienced huge barriers. Meat, fish, eggs and dairy products are often not provided to children due to cultural influences. Mothers from both communities have high faith in spiritual healers. Child feeding practices in the community is very poor compared to developed countries. Approximately one-fifth mothers still believed that feeding of nutritious foods during the illness period caused harm. The research found strong hold on the beliefs about healthy foods within the community such as impure and pure, cold, hot and neutral, harmful, beneficial or curative. Following beliefs is strongly embedded in the society that, 'if a pregnant woman eats more she will have bigger baby which can cause problem during labour'. Therefore; pregnant woman are not allowed to take nutritious food in the rural part of Nepal. This study would endorse community based nutrition programme should be established and integrated with public health network at community level. Nutrition education programmes should be provided, using various methods by mobilising local level stakeholders, focusing on knowledge, attitudes and beliefs about nutritious food to community people targeting to poor, disadvantaged and vulnerable communities which indicated in this study mainly poor knowledge, enrooted traditional beliefs and inappropriate attitudes of parents about nutritious food.

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References

- Acharya et al. (2015). *Maternal nutritional status, food intake and pregnancy weight gain in Nepal*.
- Acharya et al. (2014). *A comparative study of nutritional problems in preschool aged children in Nepal*. *International Journal of Community Nutrition*. Vol.0. (Supl). P. 136.
- Acharya, JR. (2012). *The Barriers to uptake of eye care services for leprosy patients in Nepal*. An article published in *Participation (National Journal), A Nepalese Journal of Participatory Development*. 59-69. Available at: www.nepan.org.np/gallery/publication/PARTICIPATION-13.pdf accessed on Jan. 2015.
- Acharya, M. and Bennett, L. 1981. *The rural women of Nepal: An aggregate analysis and summary of 8 village studies*. Kathmandu: Centre for Economic Development and Administration, Tribhuvan University.
- Adhikari, J. (2010). *Food insecurity, conflict and threats in Nepal in Livelihood Insecurity and Social Conflict in Nepal* (eds. Upreti, BR and Müller-Böker, U). South Asia Regional Coordination Office: Swiss National Centre of Competence in Research North-South; Kathmandu.
- Andersen, ML., and Taylor, HF. (2007). *The extended family may live together for many reasons, such as to help raise children, support for an ill relative, or help with financial problems*. *Sociology: Understanding a diverse society*. p. 396 ISBN 0-495-00742-0.
- Bandyopadhyay, M. (2009). *Impact of ritual pollution on lactation and breastfeeding practices in rural West Bengal, India*. *International Breastfeeding Journal* 4. 2. <<http://www.internationalbreastfeedingjournal.com/content/4/1/2> (accessed Dec. 14, 2014).
- Beardsworth, A. and Keil, T. (1997). *Sociology on the menu: an invitation to the study of food and society* Routledge, London.
- Bennett, L. (2005). *Gender, Caste, and Ethnic Exclusion in Nepal: Following the Policy Process from Analysis to Action*. Paper presented at the Conference *New Frontiers of Social Policy: Development in a Globalizing World*, Arusha, Tanzania.
- Bishwakarma, R. (2009). *Social Inequalities in Child Nutrition in Nepal*. Washington D.C: World Bank Internship Project Paper.
- Bishwakarma, R., and Vanneman, R. (2008). *Caste, Gender, and Location effect on Child Stunting in Nepal*. Paper published in *American Sociological Association Meetings*, Boston, October 2008.
- Bhattachan, et al. (2009). *Caste-based Discrimination in Nepal*. Working Paper Series. (3). New Delhi: Indian Institute of Dalit Studies.
- Bryant et al. (2003). *The Cultural Feast: An Introduction to Food and Society*, 2nd Ed. Belmont, CA: Thomson Wadsworth.
- Caulfield et al. (2004). *Under-nutrition as an underlying cause of child deaths associated with diarrhoea, pneumonia, malaria, and measles*. *Am J Clin Nutr* 80: 193-198.
- Cox, DN. & Anderson, AS. (2004). "Food Choice." in *Public Health Nutrition*, Gibney MJ et al., eds., Blackwell Science. Oxford, pp. 146-166.
- Christakis, G. (1973). *Nutritional assessment in health problems*. *Am. J. Public Health*. 63(suppl): 1.
- Darmstadt et al. (2006). *Review of domiciliary newborn-care practices in Bangladesh*. *Journal of Health, Population, and Nutrition* 24(4), 380-393.
- de Onis, et al. (2004). *Estimates of global prevalence of childhood underweight in (1990) and (2015)*. *JAMA* 291: 2600-2606.
- de Onis, M., Frongillo, EA. and Blössner, M. (2000). *Is malnutrition declining? An analysis of changes in levels of child malnutrition since (1980)*. *Bull World Health Organ* 78: 1222-1233.
- Devkota, B., and van Teijlingen, E. (2010). *Understanding effects of armed conflict on health outcomes: the case of Nepal*. *Conflict & Health* 4 (20) www.conflictandhealth.com/content/4/1/20.
- DFID. (2009). *Nepal: maternal mortality and Morbidity Study*. London, see: www.dfid.gov.uk/Documents/publications/nepal-maternal-mortality.pdf
- Dindyal, S., and Dindyal, S. (2004). *How Personal Factors, Including Culture And Ethnicity, Affect The Choices And Selection of Food We Make*. *The Internet Journal of Third World Medicine*, vol. 1. no. 2.

- Edris, M. (2006). *Assessment of nutritional status of preschool children of Gumbrit, Ethiop J Health Dev* 21: 125-129.
- Ellahi, B. (2014). *Dietary intake patterns of South Asian men attending mosques in Burnley, UK*. Fieldhouse, P. (1995). *Food and Nutrition: Customs and culture*. London: Chapman & Hall.
- Fisher, S. and Slaney, M. (2013). *Monitoring and evaluation of climate change adaptation in Nepal*.
- Ferro-Luzzi, G. (1980). *Food avoidances during the pueriperium and lactation in Tamilnad*. In: J.K.R. Robson (Ed.), *Food, Ecology and Culture*. London: Gordon & Breach Science Publishers. pp. 109-117.
- Gittelsohn, J., Thapa, M. and Landman, L.T. (1997). *Cultural factors, caloric intake and micronutrient sufficiency in rural Nepali households*. *Social Science & Medicine*, 44, 1739-1749.
- Gittelsohn, J. (1991). *Opening the box: Intra-household food distribution in rural Nepal*. *Social Science and Medicine*, Vol. 33 (10): 1141-1154.
- Hill, S.E. (1990). *More Than Rice and Peas: Guidelines to improve food provision for Black and Ethnic Minorities in Britain*, The Food Commission, London. *Journal of Current Research* 2: 103-108.
- James et al. (1997). *The contribution of nutrition to inequalities in health*. *British Medical Journal*, vol. 314, no. 24 May, pp. 1545-1549.
- Karim et al. (2003). *Determinants of food consumption during pregnancy in rural Bangladesh: examination of evaluative data from the Bangladesh Integrated Nutrition Project*. Tufts University. Available from http://nutrition.tufts.edu/pdf/publications/fpan/wp11-food_consumption.pdf accessed Feb., 2015.
- Khongsdier, R., and Mukherjee, N. (2003). *Effects of heterosis on growth in height and its segments: a cross-sectional study of the Khasi girls in Northeast India*. *Ann Hum Biol*, 2003 Sep-Oct; 30(5): 605-21.
- Malla Pradhan, S. (2000). *Property Rights of Nepalese Women*. FES Nepal. Available at http://www.nepaldemocracy.org/gender/property_rights.htm. Assessed on Jan., 2015.
- Moestue, J., and Huttly, S. (2008). *Adult Education and Child Nutrition: The Role of Family and Community*. *Journal of Epidemiology and Community Health*, 62: 153-159.
- Müller, O., and Krawinkel, M. (2005). *Malnutrition and health in developing countries*. *CMAJ* 173: 279-286.
- Murphy, J.L. (2011). *Nutrition Knowledge and Attitudes of Pre-registered and Registered Nurses in relation to Cancer Survivorship*. *Proceedings of the Nutrition Society*, 70.
- Nagpal, N. (2003). *Health Matters: Coping Indigenously*. *Nursing Journal of India*, vol. 94, no. 4, pp. 78-80.
- NDHS. (2011). *Nepal Demographic Health Survey, New ERA under the aegis of the Ministry of Health and Population*. ICF International provided technical assistance for the survey through the USAID Nepal.
- . (2006). *Nepal Demographic Health Survey*, CBS, *Journal of Current Research* 2: 103-108.
- Nichter, M. (1989). *Anthropology and International Health: South Asian Case Studies* London: Kluwer Academic Publishers.
- Nichter, M., and Nichter, M. (1983). *The ethno physiology and folk dietetics of pregnancy*. *Human organization*, 42, 234-246.
- Odent, P.L.G. (2010). *Early infant feeding and neonatal survival in Nepal: Breastfeeding, colostrums and discarding of the first milk*. University College London, U.K.
- Otgonjargal et al. (2012). *Nutritional status of under-five children in Mongolia*. *Journal of Medicine and Medical Sciences* 3: 341-349. 15.
- Pandey et al. (2010). *Determinants of infant and young child feeding practices of Nepal: Secondary data analysis of DHS (2006)*. *Food and Nutrition Bulletin*: 31(2): 334-51.
- Riordan, J. and Hoover, K. (2005). *Perinatal and Intrapartum Care*. In Riordan J (ed) *Breastfeeding and Human Lactation*. Jones and Bartlett: London. Pp. 185-217.
- Reed, B.A., Habicht, J.P. and Niameogo, C. (1996). *The effects of maternal education on child nutritional status depend on socio-environmental conditions*. *International Journal of Epidemiology* 25: 585-592.
- Rocherson, Y. (1988). *The Asian Mother and Baby Campaign: The Construction of Ethnic Minorities' Health Needs*. *Critical Social Policy* 8, 4-23.

- Rustein, S.O. and Johnson, K. (2004). *The DHS wealth index: DHS comparative reports no 6*. Calverton, MD: ORC Macro.
- Rush, D. (2000). *Nutrition and maternal mortality in the developing world*. *American journal of Clinical Nutrition*, 72 (suppl), 212S-240S.
- Sapkota, V.P., and Gurung, C.K. (2009). *Prevalence and Predictors of Underweight, Stunting and Wasting in Under-Five Children*. *Nepal Health Res Counc* 7: 120-126.
- Siddiqi, N.A., Haque, N., and Goni, M.A. 2011. *Malnutrition of Under-Five Children: Evidence from Bangladesh*. *Asian Journal of Medical Sciences* 2: 113-118. 14.
- Singh, J. (1998). *A review of the literature on practices and beliefs regarding maternal and infant/child nutrition in Nepal*. Kathmandu: Kathmandu Academy for Educational Development.
- Subba et al. (2007). *Infant feeding practices of mothers in an Urban areas in Nepal*, *Kathmandu University Medical Journal*; 5(1)42-47.
- Tamang, A., and Broom, A. (2010). *The practice and meanings of spiritual healing in Nepal*. *South Asian History and Culture*, Vol 1,2:328 – 340.
- Thomas, G.C., Howe, K and Keen, S. (2011). *Supporting black and minority ethnic students in practice learning*, 37-54.
- UN/SCN. (2010). *6th report on the world nutrition situation: progress in nutrition*. Geneva: Administrative Committee on Coordination-Standing Committee on Nutrition, United Nations.
- UNICEF. 2014. *UNICEF-WHO-The World Bank Joint Child Malnutrition Estimates, September*. Available at <http://www.who.int/nutgrowthdb/estimate> accessed on November, 2014.
- . 2005. *The State of the World's Children; A UNICEF REPORT: Childhood under threat*.
- Vijayaraghavan et al. 1990. *Effect of massive dose vitamin A on morbidity and mortality in Indian children*. *The Lancet* 336. 1342-1345.
- WFP. 2013. Available at <http://www.wfp.org/countries/nepal/overview> accessed on 17 January, 2015
- Willett, W.C. and Stampfer, M.J. 2013. *Current evidence on healthy eating*. *Annual Review of Public Health*: 34, 77-95.
- WHO. (2014). *UNICEF-WHO-The World Bank Joint Child Malnutrition Estimates, September*. Available at <http://www.who.int/nutgrowthdb/estimate> accessed on November, 2014.
- . (2014)a. *World Health Organization, Nutrition: Exclusive breast feeding* http://www.who.int/nutrition/topics/exclusive_breastfeeding/en/ Accessed 15 January, 2015.
- . (2006). *The country co-operation strategy, (2006) – 11*. Available at http://www.who.int/countryfocus/cooperation_strategy/ccs_npl_en.pdf, Accessed on 17 Jan., 2015
- . (1989). *WHO EMRO Technical Publication No 13. Guidelines for the development of a food and nutrition surveillance system for the countries in the Eastern Mediterranean Region Based on the deliberations of a WHO/FAO Inter Country Meeting on Nutrition Surveillance Islamabad, Pakistan, October 1988*.
- World Bank. (2015). *Global Economic Prospects: A World Bank Group Flagship Report, South Asia: Chapter 2*, Pg. 89 – 100 Available at http://www.worldbank.org/content/dam/Worldbank/GEP/GEP_2015a/pdfs/GEP15a_web_full.pdf Accessed on 24th January, 2015.
- . (2014). *UNICEF-WHO-The World Bank Joint Child Malnutrition Estimates, September*. Available at <http://www.who.int/nutgrowthdb/estimate> accessed on November, 2014.
- . (2008). *Nepal Country Overview 2008*. Available at <http://www.worldbank.org.np/WBSITE/EXTERNAL/>
- Zewdu, S. (2012). *Magnitude and Factors Associated with Malnutrition of Children Under Five Years of Age in Rural Kebeles of Haramaya, Ethiopia*. *Harar Bulletin of Health Sciences* 4: 221-232.

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