

Training Workshop on Household Air Pollution and Monitoring

Summary and recommendations

A five-day interactive multi-sectoral training workshop on household air pollution and monitoring (THAP¹) took place in Paro, Bhutan from 21 to 25 March 2016, organized by the Department of Public Health, Ministry of Health, Bhutan and the World Health Organization with the support of trainers from University of California, Berkeley, the University of California, San Francisco and the WHO Collaborating Centre for Occupational and Environmental Health, Sri Ramachandran University, Chennai, India.

Twenty-one participants from Bhutan attended the training drawn from interested departments and institutions, including ministries of health, renewable energy, hydro-metrology, environment; higher education institutions, Tarayana, a non-governmental organization involved in cookstove improvements, and UN bodies. Participants included district medical officers, programme officers from the Ministry of Health, governmental officials from other relevant agencies, teaching staff with nursing, medicine and environmental science backgrounds and other stakeholders.

The impetus for the training arose from the evidence that premature death and morbidity in South-East Asia are dominated by non-communicable diseases (NCDs). Household air pollution is a significant risk factor particularly stroke, ischaemic heart disease, chronic obstructive pulmonary disease, lung cancer and childhood pneumonia. The evidence for other adverse health impacts such as low birth weight and pre-term births, tuberculosis, asthma and stunting continues to be strengthened. In Bhutan more than one third of households use wood as the main source of fuel for cooking purposes however in rural areas this number doubles. Polluting fuels such as kerosene are in widespread use for heating and lighting purposes and solid fuel is commonly used for some cooking and heating functions even when electricity is readily available. In response to this situation, the Government of Bhutan has included specific actions in its multisectoral National Action Plan on NCDs to reduce the burden of disease from household air pollution over the five year period 2015-2020.

The main purpose of the training was to equip health professionals, researchers and policy makers with the necessary skills to design, implement and monitor programmes to reduce household air pollution. The training was targeted to participants seeking to evaluate and/or design interventions to address household air pollution-related health impacts.

The training took the form of formal teaching, hands-on demonstration, fieldwork and group work to develop proposals for evaluating household energy projects. During the training participants were introduced to the use of questionnaires and monitoring equipment to enable them to initiate their own household air pollution interventions and to evaluate their impact on health. This included household and personal exposure monitoring, stove usage, health impact assessment including the use of biomarkers of exposure and effect.

¹ THAP means stove, fire or cooking in Dzongkha – the national language of Bhutan.

The relevance to Bhutan was emphasized through consideration of policies for renewable energy, and experience with provision of improved cookstoves. Several of the Bhutanese participants presented on their current work on energy and household air pollution monitoring, including work with local communities and national policy. A number of local cultural practices were identified which may increase exposures to particulate matter and other health damaging pollutants were discussed including the practice of the preparation of animal food indoors, resting by biomass fires, especially by women following childbirth, and the widespread use of kerosene and wood for space heating. Conversely the incorporation of an increasing number and range of modern electrical cooking devices into day-to-day life gave a positive outlook particularly in the light of improvements in the provision of renewable forms of electricity such as hydro-power. The results of recent academic research on exposure measurements in Bhutan and a significant integrated exposure study in Tamil Nadu, India on the impact of household air pollution on pregnancy and birth outcomes were presented.

Participants worked in groups and developed the following proposals for further work:

- Real-time assessment of household air pollution in Bhutanese households using improved cookstoves and traditional stoves and their associated health outcomes,
- Effectiveness of improved cookstove dissemination in reduction of household air pollution in Bhutan,
- Assessment of knowledge, attitude and practice on stove and fuel use and health effects in different communities of Pemagatshel Dzongkhag in Eastern Bhutan; and
- A hospital-based study to assess the impact of household air pollution on low birth weight and preterm birth

Participants were provided with copies of all presentations used in the training, all references referred to in the presentations, and standard operating procedures for equipment use. Real-time carbon monoxide monitors and temperature sensors used to measure stove use were left with the participants at the end of the training to facilitate pilot testing and further development of proposals after the end of the training.

Closing remarks by the WHO Representative to Bhutan drew attention to the efforts by WHO to expand the global response to air pollution, including in the context of the recently adopted sustainable development goals and regional and national actions to prevent and control NCDs. On behalf of WHO, she committed to work with partner organizations to mobilize technical support and resources, as necessary to assist in developing and implementing the project proposals further.

Participants completed an evaluation of the training and identified positive effects on their level of awareness and useful impact on the direction on their work. A number of suggestions were sought and obtained for consideration by WHO in organizing further trainings on this topic. A summary of the evaluation is contained in the annex.

The following recommendations were discussed in plenary as ways to strengthen and continue the momentum to monitor and evaluate household air pollution in Bhutan and in the WHO South-East Asia Region..

Recommendations

- a) The NCD Action Plan for Bhutan, with elements on Household Air Pollution, should be fully costed and implemented.
- b) Feasible interventions to reduce household air pollution should be prioritized for evaluation. The project proposals developed during the workshop should be further developed and considered for implementation in this context.
- c) Existing national population health surveys should be utilized to identify key areas of health impact of particular relevance for Bhutan for addressing in future evaluation projects
- d) Collaboration with existing stove replacement projects in the country should be established urgently to ensure that planned phases take into account not only fuel efficiency but health benefits and incorporate health impact evaluation as part of the replacement project.
- e) Innovative ways to provide some continued technical support during project development should be found, including skype/webinar links with overseas experts, and partner institutions in the region and country.
- f) Resource mobilization efforts for project implementation should be supported including with regional organizations with interests in sustainable development and nature conservation, overseas countries with development work in Bhutan (past and present) e.g., Clean Cookstove Alliance small grants programme.
- g) The Ministry of Health should work jointly with energy and other relevant agencies, such as education authorities and existing non-governmental organizations engaged in energy and cookstove projects.
- h) WHO should work with donors and interested partners to stimulate and support capacity-building programmes focusing on health benefits from clean household energy, including as part of broader postgraduate environmental health programmes. .
- i) WHO South-East Asia Regional Office should utilize the lessons learned from the present training and its evaluation by participants to support additional training in member states of Southeast Asia, depending on needs and resources.

Evaluation of training workshop on Household Air Pollution and Monitoring in Bhutan

The evaluation was completed by 17 participants (81%). The following aspects were quantitatively scored: Quality of trainers, Question and answer time allocated, Discussion time allocated; Language/comprehensibility; Quality of reading materials; Logistics and Staff responsiveness (92%). The satisfaction of participants on each element confirmed high level of satisfaction with an average overall satisfaction rating of 84%. The following questions sought qualitative comments and feedback.

How has the training workshop potentially modified the direction of your work?

Almost all of the respondents of the participants said that they had become more aware of the effects of household air pollution on health, with several remarking that although they were aware of the need for improved cookstoves they had not been made aware of the health benefits that could be associated with these programmes, focusing previously on fuel efficiency. Several respondents said they would look for possibilities to include more evidence-based information in their work and would include what they had learned in their day-to-day advocacy and contact with people visiting hospitals and in rural areas.

Which content area was most relevant to your work?

The majority of respondents said the information about the health effects of household air pollution, and a better understanding of the exposure–source pathways were directly relevant to their work . Several remarked that the household and personal exposure monitoring information was directly relevant.

What recommendations would you make for future training workshops on the topic of HAP?

More than half of respondents would have appreciated more time devoted to hands-on training with the monitoring equipment and how to interpret the findings, even though they acknowledged this would have meant extending the duration of the training beyond 5 days. Since the training was the first of its kind in Bhutan a number of respondents suggested follow-up activities and mentoring be arranged. A number of people appreciated the multi-sectoral approach to the training and suggested in future efforts to involve more clinicians and those involved in outdoor air pollution monitoring would be useful.

Did the field trip meet your expectations?

Only 4 respondents felt that the field trip did not meet their expectations, primarily because they would have wished additional time for this part of the training. Many respondents appreciated the field trips particularly as they introduced the participants how to place the monitoring devices to get the most accurate results and introduced new equipment and devices that participants were not aware of earlier.

Which aspect of the field trip was most relevant to your work and why?

The most relevant aspects of the field trip were seen as how to decide sampling locations and how to place the monitors to best measure the levels of household air pollutants. This was the first experience of learning about the devices that are available and their pros and cons for the majority of respondents and they appreciated going into the field to see these aspects first hand.

What are 2-3 aspects of the field trip would you recommend repeating in the future?

The two aspects of the field trip that participants would recommend repeating in the future were to include additional households so that smaller group sizes could be used. This would mean that participants got even more hands-on opportunities.

What are 2-23 aspects of the field trip that you would change in the future?

For future trainings participants suggested making the field trips a larger part of the training, and including the opportunity for the groups to download and interpret the data they had gathered. Visiting households regularly using the traditional stoves was mentioned by a number of respondents.

How will you communicate what you have learnt in the training to your colleagues on return to the office?

Almost all of the participants committed to sharing what they had learnt with colleagues on their return to work. This included making a written report of the training, sharing the training materials and PowerPoints and including in their teaching activities and community work. A number of participants committed to including what they had learnt in research proposals.

How do you plan to use the knowledge learned at the workshop in your work

More than half of the respondents committed to continuing work on the proposals developed in the group work or using what they had learned in the course in their community, and research work or teaching.

General additional comments

In general respondents found the training well organized, with experienced resource personnel. The training was judged to be very relevant to Bhutan because of the high solid fuel use.