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Understanding the interactions between socio-environmental characteristics and psycho-social factors in predicting household water treatment practices in rural Nepal

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Access of potable drinking water is still a leading global challenge. Household water treatment (HWT) is one possible means to tackle this issue of non-potable drinking water at household level. Unfortunately, studies have shown that people do not use it regularly which otherwise can make positive impact on people health.

Researchers use several psychology concepts or models to explain this phenomenon. These models often mention some psycho-social factors that determine or are responsible for the behavior, for example perception of risk or the perception of benefit using the product. Some of these psychology model also mentioned that socio-environmental characteristics (contextual factors) influence the psycho-social factors and thereby influence the behaviour. Even though the interactions between contextual and psycho-social factors is essential to understand the behaviour of households in WASH research, such interactions are often ignored and remain to be analysed on its own merit.

The motivation of this research is to analyse such interactions and then use the result to model the adoption of water treatment by households. We present a novel approach to assess the regular usage of household water treatment (HWT) using data from a cross-sectional study in October 2014. 451 households in 5 villages in mid-western rural Nepal were randomly selected to participate in the study. A Bayesian belief networks (BBN) model that integrates socio-environmental characteristics, such as education and type of water source, and the RANAS psycho-social factors (Risk-Attitude-Norm-Ability-Self regulation) was developed.

Preliminary results show that 1) a single socio-environmental characteristic can be associated with multiple psycho-social factors that positively influence households to adopt HWT, 2) Education and location of the households and HWT promotion are the most influential socio-environmental characteristics, 3) Behavioral change intervention should address at least three psycho-social factors to boost the likelihood of using HWT. Our approach can help the implementer to understand the system and develop better intervention to increase the chances of HWT uptake and improve livelihoods of people in developing countries.

Keywords: Household water treatment, BBN, behavior change strategies, socio-environmental factors, psycho-social factors