

CHAPTER 6

DISCUSSION OF STUDY 1

This chapter discusses the general information from the results, followed by the influential factors on pharmacists' intention and the modified model without perceived behavioral control

1. General information

The survey had a response rate of 78.8% (656 from 833) ranging from 73.2% to 94.4%. The rates of response was high because of repeated remind and incentive for completing the questionnaires. Three follow-up mailings were done, a reminder postcard, one follow-up questionnaire and another questionnaire enclosed with an incentive. The response rate in this study was higher than that in previous studies. Plianbangchang (1999) conducted a similar study to explain Thai community pharmacists' intention to dispense antibiotics using the theory of reasoned action. Only 32% of the pharmacists returned questionnaires (202 from 640 deliverable mails). The study by Lambert, et al. (1997) on factors associated with antibiotic prescribing in physicians reported a response rate of 69% (27 from 39). Walker, et al. (2001) also investigated prescribing behaviors using the theory of planned behavior, the response rate in their study was 68% (126 from 185).

The non-response bias was examined by comparing early respondents with non-respondents who were persuaded to complete the questionnaires with the incentive. Of 29 tested variables (6 categorical variables and 23 continuous variables), only 2 aspects (work setting and owner of drugstores) differed significantly. The finding suggests that nonrespondents may not be radically different from respondents. However, they are more likely to be full-time pharmacists in hospital pharmacies who work part-time in drugstores. There maybe some nonresponse bias in this study. Nevertheless, response rate in our study was 78.8%, which is considered much higher than those in similar survey in community pharmacy, as mentioned above.

The most common history taking items reported by the pharmacists were fever, cough, rhinorrhea, age of patients and congestion, which were all in accordance with the guidelines of history taking for community pharmacists in order to elicit information needed to accurately assess the illness and to recommend the appropriate treatment (Blenkinsopp and Paxton, 1995; Tietze, 2004).

The medications most reported by the pharmacists that they would dispense for patients in the cases were antihistamines, including first-generation and second-generation groups. Nearly 97% of pharmacists dispensed antihistamines. Twenty three percent of pharmacists used second-generation antihistamines for URI. There was no evidence of effectiveness of second-generation antihistamines (e.g., loratadine, cetirizine) on the common cold symptoms. On the contrary, first generation antihistamines (e.g., chlorpheniramine, brompheniramine, triprolidine) have beneficial effects on rhinorrhea and sneezing for this condition (De Sutter, et al., 2007; Tietze, 2004). The combinations of antihistamines and decongestants were dispensed by 68.7% of pharmacists. Of these, triprolidine combined with pseudoephedrine was the most frequently dispensed (77% of pharmacists). Evidence of benefit of regimens combining antihistamines and decongestants was found in older children and adults. Nevertheless, a lack of benefit was seen with these regimens for young children (Arroll, 2005a). Ten pharmacists revealed that they would have dispensed pseudoephedrine. In Thailand, this drug is classified as psychotropic substance schedule 2, which can only be obtained from a qualified physician in the hospital.

Seventeen percent of pharmacists would dispense antibiotics, particularly amoxicillin, although evidence and consensus suggested that there is no indication for antibiotics for treating the common cold (Arroll and Kenealy, 2007; Snow, et al., 2001). Antibiotics for the common cold or viral URI of which there is no proven benefit, contribute to development of antibiotic resistance, adverse reactions and health-care costs (Bertino, 2003, Gonzales, et al., 2001). Nine pharmacists intended to dispense nonsteroidal anti-inflammatory drugs (NSAIDs). Ibuprofen and aspirin are often viewed as causing gastrointestinal irritation and bleeding (Laine, 2003). To improve the knowledge and practice of pharmacists, more education and training are needed.

2. Influential factors on pharmacists' intention

Most practising pharmacists in southern Thailand reported a low level of intention to dispense antibiotics for viral URI or common cold. Their attitude toward antibiotic dispensing for this condition was negative. The perceived subjective norm on antibiotic dispensing was in the moderate level. Perceived behavioral control was also somewhat against the use of antibiotics

Pharmacists' intention to dispense antibiotics was highly influenced by attitude in this setting. Perceived subjective norm showed a rather small influence on behavioral intention. Perceived behavioral control had also practically no influence on the intention.

Despite the evidence that antibiotics neither shorten the duration of URI nor prevent secondary bacterial infections (Arroll and Kenealy, 2007), these drugs are frequently used to treat this disease (33% pediatric URI in the US, 74% of concurrent URI patients reported the treatment with antibiotics in Thailand) (Gaur, et al., 2005; Thamlikitkul and Apisitwittaya, 2004). In Vietnam, 83% of drugstore personnel dispensed antibiotics for such a condition (Chuc, et al., 2001). The intention to use antibiotics for URI in our study was lower than that previously reported. However, the variability of results in antibiotic use may depend on the data collection method. Regarding SCM in study of Chuc, et al.(2001), drugstore personnel learned history of patients from only questions asking. They may have limited information on patients if their history taking skill is limited. Limited information may influence their dispensing behaviors. On questionnaire survey, in contrast, providers are presented with all patient history in details. Accordingly, these two methods may provide dissimilar results. In SCM study, pharmacists may be more likely to dispense antibiotics because of uncertain diagnosis for URI. Moreover, the different contexts of hospital-based physicians and practising pharmacists or the different contexts among countries may contribute to the variations of results. Walker, et al. (2001), similar to us, found that attitude is an important influential factor on intention of UK general practitioners to prescribe antibiotics for URI. The study by Plianbangchang (1999), based on the theory of reasoned action, also reported a high influence of attitude on intention to dispense antibiotics for this disease among Thai pharmacists in central region of the country. This consistent high level of

influence of attitude on intention may be explained by the contexts in which such providers are able to control their own decisions or having level of autonomy in community practice.

The pharmacists in the current study had low intention and also low attitude to dispense antibiotics, which were better predicted by perceived benefit than perceived problems of antibiotics. The result in this study is inconsistent with previous studies by Plianbangchang (1999) in Thailand and by Cho, et al. (2004) in Korea. These researchers reported that pharmacists believed antibiotics would speed up the patients' recovery as well as prevent secondary infections. Perhaps these practitioners were less exposed to such information compared to our sample, who are in a new generation (67.5% less than 10 years experience in 2005).

Subjective norm was the second most important predictor of intention to dispense antibiotics, with a weak, but statistically significant effect. Lambert, et al. (1997) and Liabsuetrakul, et al. (2003) found that subjective norm had a strong influence on physicians' intention to use antibiotics for ambulatory patients in a managed care setting and for prevention of post-caesarean infections in a hospital, respectively. In those institute contexts where the members of the same or similar professions actively interact, subjective norm would be automatically developed and may become more influential than one's own beliefs and attitude. On the other hand, subjective norm has a weaker influence on pharmacists' dispensing intention because of the low level of professional interaction with their peers. Among the potential norm creators, Liabsuetrakul, et al. (2003) showed that supervisors during residency training were the most important referents for physicians' practice patterns, whereas same-level or senior colleagues were less important. In our study, faculty of schools of pharmacy had no influence than did physicians and other pharmacists. This reflects the waning role of the school after the pharmacists have gone into community practice. Physicians and other pharmacists were probably more important because of some degree of professional competition. Physicians is also well-respected as expert on diagnosis and drug use, thus pharmacists prefer to follow their practice patterns.

Being a relatively new construct in theory of planned behavior, perceived behavioral control has been rarely mentioned in previous studies on antibiotic prescribing or dispensing. In fact, this factor does exist. For example, antibiotic overuse and misuse by physicians in Korea (Cho, et al., 2004) was influenced by patient (or parent) demand. Nonetheless,

in a Canadian study, children from households with higher incomes were less likely to receive antibiotic prescriptions for viral respiratory tract infection (Kozyrskyj, et al., 2004). In the context of Thai community pharmacies, where the majority of clients are from a lower socio-economic group, the clients would have rather little perceived control over the pharmacists, as shown in our results.

Respiratory tract infection is very common in the community, as a result, one would expect that antibiotic dispensing would be a significant source of income to the pharmacy (Carlson and Wertheimer, 1992; Goel, et al., 1996). This factor would be expected to affect dispensing behavior. Fortunately, this pessimism was not apparent in our sample. The majority of respondents (64%) were part-time practitioners, who are usually hired on a per hour basis. Under such a condition, the income is quite independent of whether antibiotics are dispensed.

Beliefs in standard practice guidelines of the Pharmacy Council failed to predict perceived behavioral control. Contrary to these results, Thamlikitkul and Apisitwittaya (2004) found that clinical practice guidelines on antibiotic use in adults with URI were important tools for reducing the antibiotic prescription rate in physicians in their teaching hospital. Again, the difference could be explained by the difference between the relatively independent context of community pharmacy and the more strictly controlled context of the teaching hospital.

3. The modified model without perceived behavioral control

According to model 3 (hypothesized model), perceived behavioral control showed no effect on intention. This model was further modified by removing perceived behavioral control and analyzed using SEM. The modified model was found to have a poor fit to the data (RMSEA = 0.074, SRMR = 0.062, TLI = 0.97 and CFI = 0.97).

In terms of predictive power, the model with no perceived behavioral control ($R^2_{\text{attitude}} = 0.63$, $R^2_{\text{subjective norm}} = 0.63$ and $R^2_{\text{intention}} = 0.86$) was quite similar to those in model 3 ($R^2_{\text{attitude}} = 0.64$, $R^2_{\text{subjective norm}} = 0.63$, $R^2_{\text{perceived behavioral control}} = 0.13$ and $R^2_{\text{intention}} = 0.86$). In addition, the effects of independent constructs on dependent constructs were determined. On comparisons of modified model and model 3, attitude was the most influence of intention (path coefficient = 0.89 for both models), followed by subjective norm (path coefficient = 0.09 and 0.07 for modified

model and model 3, respectively). Although these two models had similar R^2 and path coefficients between independent variables and intention, the modified model provided a bad fit, as mentioned earlier.

The implications, strengths and limitations of the current study, and recommendations for future studies are presented in chapter 11 “General discussion and conclusions”.