



## DEVELOPMENT OF A QUESTIONNAIRE BASED ON THE THEORY OF PLANNED BEHAVIOR TO IDENTIFY FACTORS AFFECTING PHARMACISTS' INTENTION TO CONSULT PHYSICIANS ON DRUG-RELATED PROBLEMS

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### Abstract

Pharmacists play important roles in consulting physicians on drug-related problems prior to dispensing medication to ensure safe and effective therapy. However, factors affecting pharmacists' intention to consult physicians on drug-related problems have never been reported. The present study aims to develop a questionnaire to identify factors affecting pharmacists' intentions to consult physician on drug-related problems found in outpatients with cardiovascular diseases using the Theory of Planned Behavior (TPB) as a framework. Salient beliefs were elicited from 25 outpatient pharmacists by in-depth interviews. Thematic content analysis was performed to identify salient beliefs about the behavior and to generate questionnaire items. The questionnaire consisted of both direct and indirect measurement of attitude, subjective norm and perceived control constructs of the TPB. Intention was elicited based on 6 scenarios of drug-related problems encountered in usual practice. In the pilot-test among 30 pharmacists, the questionnaire demonstrated good test-retest reliability with Pearson correlation coefficients of each construct ranged from 0.653 to 0.875. The direct measurement of each construct showed moderate internal consistency with the Cronbach's alpha coefficients of 0.757, 0.691 and 0.422 for attitude, subjective norm and perceived control, respectively. Analysis of individual items found that deletion of a question in perceived control measurement will increase the internal consistency index of this construct from 0.422 to 0.662. Thus, a questionnaire with good reliability based on test-retest and internal consistency testing has been developed for measurement of each TPB construct. The instrument may be used to examine factors affecting pharmacists' intention to consult physicians on drug-related problems in outpatients with cardiovascular diseases.

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**Keywords:** consultation, drug-related problems, pharmacists, Theory of Planned Behavior

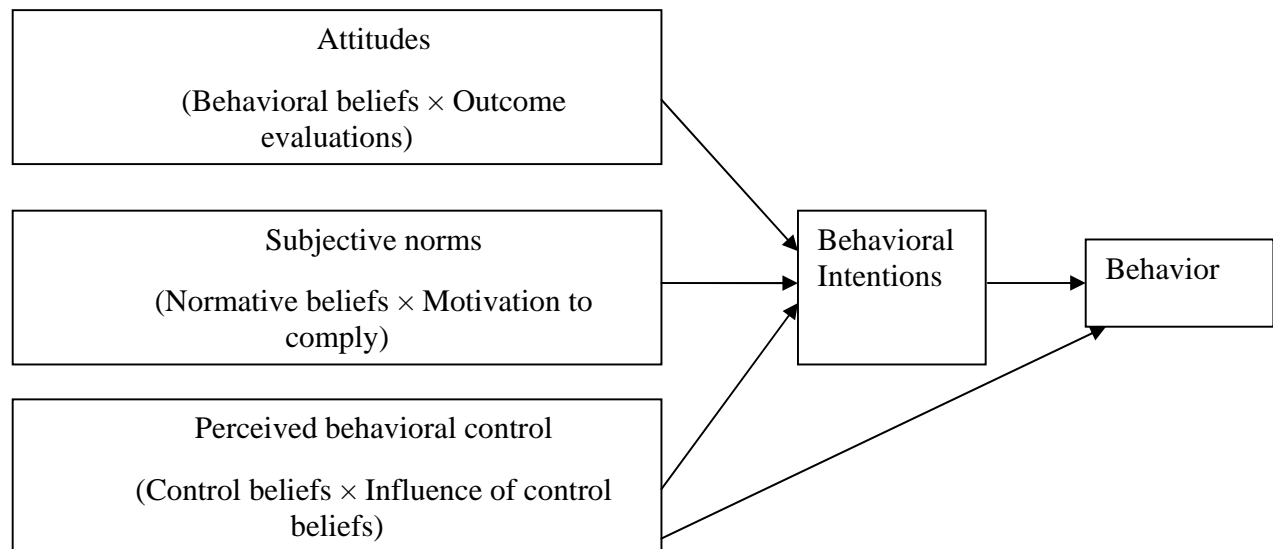
### Introduction

Pharmacists play important roles in providing pharmaceutical care by consulting physicians on drug-related problems (DRPs) prior to dispensing medication. A previous study revealed that Thai hospital pharmacists reported positive attitudes toward providing pharmaceutical care, and most agreed that providing pharmaceutical care would prevent DRPs to ensure safe and effective

therapy (Awiphan and Thadapark, 2003). However, factors affecting pharmacists' decision to consult physician on DRPs have never been reported. Understanding of these factors may prove useful in creating programs to influence pharmacists' behavior and improve quality of care provided by them. The present study explores these factors using the Theory of Planned Behavior (TPB) (Figure 1) as a framework.

The TPB suggests that people's intention to perform a specific behavior is predicted by three important determinants: attitudes, subjective norms and perceived behavioral control (Ajzen, 1991). In direct measurement of these determinants, attitudes refer to an evaluative judgment about advantages and disadvantages of performing a behavior, while subjective norms refer to a person's perception of social pressure to perform the behavior and a perceived behavioral control refers to an individual's perceived confidence in capability of performing the behavior. Additionally, each determinant may be measured indirectly (Francis et al. 2004). The attitudinal construct may be measured from 2 components including: beliefs about consequences of the behavior (behavioral beliefs) and the corresponding judgments about these consequences (outcome evaluations). Subjective norms may be measured from beliefs about how other people who are considered important to the person would like them to behave (normative beliefs) and the motivation to comply with those normative beliefs (motivation to comply). The perceived behavioral control also has two components: beliefs about factors that make it ease or difficult to perform the behavior (control beliefs) and the corresponding power of these factors to influence the behavior (influence of control beliefs) (Figure 1)

The TPB has been used to identify factors explaining variances on intention and behaviors of health care professionals in clinical practice. Between 25.6% and 34% of explained variance in behavior was reported for applications of the TPB (Godin et al, 2008). The present study aims to develop a questionnaire based on the TPB to explore attitude, subjective norm, and perceived behavioral control related to pharmacists' intention to consult physicians on DRPs in outpatients with cardiovascular diseases.



**Figure 1** The Theory of Planned Behavior



## Methodology

### Questionnaire item construction

According to Ajzen, items for measurement of TPB constructs should be generated from salient beliefs elicited from participants to whom the questionnaire is applied (Ajzen, 1991). Thus, salient beliefs about consulting physicians on DRPs encountered in outpatients with cardiovascular diseases were elicited from 25 pharmacists currently practicing in outpatient settings. The following open-ended questions were used: (1) what are the advantages (or disadvantages) of consulting physicians on DRPs? (2) who are the persons who approve (or disapprove) of you in consulting physicians on DRPs? (3) what are the factors that make it easier (or more difficult) for you to consult physicians on DRPs? All conversation was digitally recorded and transcribed verbatim. The transcript was content analyzed, coded, and further categorized into theme according to the TPB constructs, i.e. behavioral, normative and control beliefs. Salient beliefs, defined as beliefs that were more frequently mentioned and ranked in the upper 75% of the total beliefs elicited, were selected and developed into a set of belief items for each construct. A second set of items is developed to assess outcome evaluation, motivation to comply and influence of control belief. To construct items for the direct measures, set of items were generated from questions referring to overall evaluation, the opinion of important people in general as well as self-efficacy and controllability in consulting physicians. All items were measured on a 7-point scale ranging from strongly disagree to strongly agree and mixed up in a random order throughout the questionnaire. Six scenarios, describing patients presenting with the cardiovascular DRPs, were developed to measure behavioral intention. The intention was also measured on a 7-point scale ranging from the lowest to highest intention.

### Examination of questionnaire validity and reliability


Five pharmacists were asked to determine the clarity and to identify ambiguous questions, this resulting in only slight modification of the questionnaire wording. The reliability, based on internal consistency of each subscale for direct measures and test-retest correlation for both direct and indirect measures, was established by administering the questionnaire to 30 pharmacists on two occasions separated by two weeks apart. All data were entered and analyzed using the Statistical Package for Social Sciences (SPSS) version 17.

### Ethical issue

This study was approved by the Naresuan University Ethics Committees for Human Research. Participants provided written informed consent prior to in-depth interview. All data were kept in confidential with only TC and AJ having accessed to the data.

## Results

A list of 143 behavioral beliefs, 109 normative beliefs and 130 control beliefs was obtained from the content and thematic analysis. Only the first 75% of those beliefs were selected for questionnaire construction. The final questionnaire contains 10 subscales. Examples of items for each subscale are listed in Table 1.



To establish questionnaire reliability, 30 pharmacists practicing in outpatient setting were asked to complete the questionnaire in 2 separate occasions two weeks apart. Table 2 shows demographic characteristics of participants in the test-retest study. Most of them were female with less than 10 years of pharmacy practice experience.

Table 3 revealed that the test-retest correlation coefficients of both direct and indirect measures demonstrated acceptable reliability ranging from 0.653 to 0.875. In addition, the reliability of the questionnaire based on internal consistency coefficients for direct measures shown acceptable internal consistency for attitude and subjective norm; however, less internal consistency was observed for the perceived control construct.

### **Discussion and Conclusion**

Ferlie and Shortell (2001) have suggested that interventions to improve the quality of health care might function at the individual health professional level, and theories of individual behavior are more relevant to interventions directed at individuals. Eccles and colleagues (2005) have suggested that one of the desirable attributes of theories explaining behavior change at the individual level of healthcare professional is that they should explain behavior in terms of factors that are changeable (e.g., knowledge, beliefs, attitudes, motivation, perceived external constraints). Thus, the TPB, explaining people's behavior and intention based on attitudes, subjective norms and perceived control based on internal and external factors, appears an appropriate theory to study health care professionals' behavior in clinical practice. Further, Godin and colleagues (2008) based on their meta-analysis have provided evidence that the TPB was the theory most often used as reference with an overall explained variance ( $R^2$ ) of 0.31 and 0.59 observed for the prediction of behavior AND intention, respectively. Therefore, the present study aims to develop a questionnaire based on the TPB to explore and understand pharmacists' intention to consult physicians on DRPs found among outpatients with cardiovascular diseases.

To appropriately measure the TPB variables including attitudes, subjective norms and perceived control, Francis and colleagues (2004) suggest both direct and indirect measurement of each construct should be determined since both methods make distinct assumptions about the underlying cognitive structures. Direct measurement assumes that people can accurately summarize and report their beliefs that may actually ambivalent (i.e. consisting of some positive and some negative beliefs). In contrast, the indirect measurement does not make the assumption that individuals can give a summary estimate of their beliefs about behavior. However, it assumes that people can report their beliefs in a probabilistic way and can report relative weightings. By measuring constructs by both methods, the variables may explain more variance of intention and behavior targeted in the study. The present study thus developed a TPB questionnaire using both direct and indirect methods to capture attitudes, subjective norms and perceived control. In addition, we believed that indirect measurement also provide additional benefits by delineating beliefs that may become targets for interventional programs in future studies.

Direct measures of attitude and subjective norm subscales demonstrated moderate internal consistency with Cronbach's alpha coefficients of 0.757 and 0.691, respectively. However, the perceived behavioral control showed less internal consistency (alpha coefficient = 0.422). Further examination of individual items of this subscale, it was found that deletion of an item will increase the internal consistency index from 0.422 to 0.662, thus further refinement of the perceived control measure is possible for future research.

**Table 1** Examples of questionnaire items

<b>Subscale</b>	<b>Example of questionnaire items</b>
Intention	What is your intention to consult a physician on the following cases? A 67-year-old man who has diabetes and hypertension. He has never received aspirin for prevention of coronary artery disease.
<b>Direct measurement</b>	
Attitude	Consultation with physicians on drug-related problems is good.
Subjective norm	People who are important to me think that I should consult with physicians on drug-related problems.
Perceived behavioral control	I am confident that I am capable of consulting with physicians on drug-related problems.
<b>Indirect measurement</b>	
Behavioral belief	If I consult with physician on drug-related problems, patients will receive appropriate drugs.
Outcome evaluation	Getting appropriate drugs for patients is desirable to me.
Normative belief	Patients think I should consult with physician on drug-related problems.
Motivation to comply	Patients' expectation of my consultation with physicians on drug-related problems is important to me.
Control belief	I have a good relationship with physicians.
Influence of control belief	Having good relationship with physicians makes it easier to consult physician on drug-related problems.

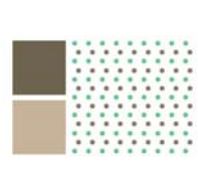
**Table 2** Demographics of participants in the test-retest study (N=30)

Demographics	Frequency	Percentage
Gender		
Male	2	6.70
Female	28	93.30
Age		
< 30	9	30.00
≥ 30	21	70.00
Education		
B.Pharm	18	60.00
Pharm.D	6	20.00
M.Pharm	6	20.00
Year of practice		
< 10	19	63.33
≥ 10	11	36.67
Setting		
Community hospital	19	63.33
General hospital	7	23.33
Regional Medical center	4	13.33

**Table 3** Reliability of questionnaire based on internal consistency and test-retest correlation coefficients

Subscale	No. of items	Internal consistency (Cronbach's alpha coefficient)	Test-retest reliability (Pearson correlation coefficient)
<b>Direct measurement</b>			
Attitude	4	0.757	0.755
Subjective norm	3	0.691	0.822
Perceived control	3	0.422	0.653
<b>Indirect measurement</b>			
Attitude	22	na	0.748
Subjective norm	6	na	0.875
Perceived control	12	na	0.808
<b>Intention</b>	6	na	0.813
<b>Over all</b>	56	na	0.798

na = not applicable



Establishment of internal consistency for the indirect measures of constructs was not performed because participants can hold both positive and negative beliefs about the same behavior; thus, it is not appropriate to assess the reliability of indirect measures using an internal consistency index (Ajzen, 2006). Instead, test-retest reliability based on the Pearson correlation coefficient was suggested to establish reliability for each subscale (Francis et al, 2004). Table 3 revealed that the test-retest correlation coefficients ranged from 0.653 to 0.875, indicating that the items were stable over time.

In conclusion, a questionnaire with good reliability based on test-retest and internal consistency testing has been developed for measurement of each TPB construct. The instrument may be used to examine factors affecting pharmacists' intention to consult physicians on drug-related problems in outpatients with cardiovascular diseases in future studies.

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