

Original article

Development of a questionnaire to evaluate the attitudes towards home health visits in applied Thai traditional medical students: A pilot study

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Background: Home health visits (HHV) are the new duty and development of students of applied Thai traditional medicine (ATM). We performed to develop a measuring instrument to ensure that students have positive attitudes to HHV.

Objective: To develop a reliable and valid questionnaire for evaluating attitudes regarding home health visits among ATM students.

Methods: There are 28 items in creating the questionnaire which is supposed to be used to assess attitudes toward HHV in four areas, including those related to the practice in HHV, the role of ATM practitioners, relationship with patients and patient's relatives, and collaboration with the multidisciplinary team. Content validity of the questionnaire was assessed by three experts. Construct validity was analyzed with measurement model through linear structural relationship (LISREL). Thirty third-year ATM students were used to assess the questionnaire's reliability. Test-retest reliability of the questionnaire was analyzed by intraclass correlation coefficient (ICC) using a two-way random-effect model with one-week intervals.

Results: The final version of the questionnaire contains 32 questions, with 24 positive and 8 negative responses. Measurement model was best-fitted with a Chi-square of 2.77, $P = 0.25$, GFI = 0.99 and RMSEA = 0.05. Cronbach's alpha coefficients for all aspects ranged from 0.79 - 0.92. All aspects of ATM students' attitudes related to HHV questionnaires were more significant than 0.80 except the attitudes related to the role of ATM practitioners, which was 0.79. They demonstrated an excellent test-retest reliability with an ICC of 0.90 ($P < 0.001$). The percentage of agreement on each item ranged from 0% to 96.7%.

Conclusion: The developed questionnaire for evaluating ATM students' attitudes on HHV has good validity and reliability for evaluating each aspect of ATM students' attitudes.

Keywords: Home health visits, attitude, questionnaire, applied Thai traditional medical students.

Home health visits (HHV) are the strategy widely used by healthcare professionals to offer treatments to patients at their homes in order to improve their

health conditions.⁽¹⁾ They are a proactive health service that is a component of the home healthcare system. At present, they are supported by the Ministry of

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Public Health. It has launched a project titled “Primary Care Cluster” for inclusive health promotion, with physicians’ teams providing public health services to individuals in their homes and communities. The project’s goal is to improve people’s access to health services in all areas and promote a holistic approach to health care.⁽²⁾ The majority of HHV patients are seniors with a chronic disease or who are unable to help themselves. Some caregivers who are relatives of the patients, i.e., who care for them at home, may feel overwhelmed by their obligations. As a result, the interdisciplinary team must pay special attention to their needs. In order to carry out clinical practice efficiently, they need to have substantial knowledge and favorable attitudes about their duties in HHV.

The arts of Thai traditional medicine (TTM) can integrate into the healthcare system, including HHV. In the clinical practice of applied Thai traditional medicine (ATM) for HHV, ATM practitioners can perform proficiency in working in collaboration with others to achieve the patient goal. They can demonstrate proficiency in performing history taking and physical examination to collect relevant information to solve health problems, make the diagnosis, and plan for the treatment. They can dispense the herbal medicine or perform various maneuvers in line with standards for applied Thai traditional medical practitioners, such as court-type Thai traditional massage, hot herbal compress treatment. Some patients may receive both treatments for recovery from illness.

Center of Applied Thai Traditional Medicine, Faculty of Medicine Siriraj Hospital, Mahidol University considers that clinical practice in providing healthcare services in ATM graduates’ roles has the nature of solving patients’ problems or problems related to the work of TTM. Bachelor of ATM program designs using a discipline-based approach with the first three years of the curriculum devoted to students’ construction of meanings or understanding of the basic concepts of various subjects such as Pre-clinical, Clinical, Thai medicine, Thai traditional pharmacy, Thai traditional therapeutic massage, Thai midwifery, i.e.⁽³⁾, through learning activities and student assessments. The last part of the curriculum, i.e., most of the fourth year, is devoted to clinical rotations in which students have the opportunity to apply their knowledge to solving problems in real situations under the supervision of the teaching staff, including the outpatient department, in-patient department, and HHV. The fourth-year ATM students practice in HHV

with their ATM supervisors and multidisciplinary team. Students will be motivated to show their roles and responsibilities while collaborating with others in this circumstance. It also enhances the students’ attitudes toward curing the patients, especially the elderly.

However, HHV is a new duty and development of ATM students. It has not yet created a measuring instrument for attitudes towards HHV in ATM students to ensure that those students have positive attitudes and the proficiency in working effectively with multidisciplinary teams which following the expected learning outcomes, Thai Qualifications Framework for Higher Education in the field of ATM at the Bachelor Level (TQF:HEd1-ATM)⁽⁴⁾ and the standards for ATM practitioners of Thai Traditional Medical Council.⁽⁵⁾ In addition, HHV trains students to improve their communication skills that correspond to 21st Century skills.⁽⁶⁾ Thus, we performed this pilot study to develop a reliable and valid questionnaire for evaluating attitudes towards HHV in ATM students. Many stakeholders will benefit from the survey, including ATM students, patients, and educational administrators. It will assist ATM students in improving their performance and attitudes towards clinical practice related to patients’ illness, including bio-psycho-social aspects. Instructors will know how much is enough to deliver HHV content and how to revise teaching and learning activities. Moreover, the patients who received HHV would be provided care from ATM practitioners with positive attitudes toward clinical practice and satisfaction with the treatment.

Materials and methods

This study was conducted at the Center of Applied Thai Traditional Medicine, Faculty of Medicine Siriraj Hospital, Mahidol University from September to December 2018, after the study protocol has been approved by Siriraj Institutional Research Board, EC320/2561 (EC3)Si.506/2018.7

Firstly, we searched the literature review to compile the questionnaire related to attitudes and created the ATM students’ attitudes related to HHV questionnaire, which comprises of four domains as 15 items for practice in HHV, four items for ATM practitioners’ roles, seven items for relationships with patients and their relatives, and two items for collaboration with the multidisciplinary team. A total of 28 five-point Likert scales represents the ATM students’ positive views and negative views on each question. There were 17 positive questions and 11 negative questions. There were five rating scales for

the question. Items were designed in Thai language using the terms “strongly disagree”, “somewhat disagree”, “neutral”, “somewhat agree”, and “strongly agree” for one to five points, respectively.

Secondly, we divided the questionnaire quality assessment into two parts. Part 1 validity, two verification methods were used: content validity and construct validity. Part 2 reliability, verification of two methods were used: stability reliability and internal consistency reliability, which were detailed as follows.

Content validity of the questionnaire was evaluated by item content validity index (CVI). The questionnaire was proved by three experts in educator in assessment, physician in family medicine, and practitioner in ATM. They evaluated either appropriate demographic information and each question by providing the items a rating of 4 for very relevant, 3 for relevant but needing minor revision, 2 for an item needing some revision, and 1 for not relevant.⁽⁷⁾ Then, for each item, the item content validity index (I-CVI) was calculated as the number of experts giving a rating of either 3 or 4 (thus dichotomizing the ordinal scale into relevant and not relevant), divided by the total number of experts. The criterion for acceptable validity evidence was a CVI of 0.80 or greater.⁽⁷⁾

Construct validity, three times, the data were collected with the sample, totaling 174 ATM students studying at the Faculty of Medicine Siriraj Hospital, Mahidol University using linear structural relationship (LISREL) for Windows student version, and presenting the results as an image of the measurement model. A measurement model based on the four elements of the questionnaire.

The questionnaire’s reliability was tested among 30 of 3rd-year ATM students studying at the Faculty of Medicine Siriraj Hospital, Mahidol University. The developed questionnaire was printed on paper, complete 30 sets, and sent to a cohort voluntarily. Data analysis was divided into two parts: the first part was a measure of internal consistency using Cronbach’s alpha coefficient. The second part was a measure of stability using test-retest method assessed by intra class correlation coefficient (ICC) in the two-way random-effect model. The reliability was evaluated two times. The first and the second time were seven days apart. Median, interquartile range (IQR), proportion, percent, and ratio were used to describe participant agreement of each questionnaire item. Data were analyzed using PASW Statistics for Windows, Version 18.0. Chicago: SPSS Inc. Statistical significance was taken at $P < 0.05$.

Results

The results of the content validity, the first reviewing, found that the CVI value was between 0.67 and 1.00, with 13 out of 28 CVI criteria that met the criteria. The research team then revised the questions according to the recommendations of experts, such as “some questions had duplicate content,” “avoid to use too many negative items,” and “should not use the phrases ‘the most’, which made the participants’ decision difficult.” The details of the 28 items are presented in Table 1.

The questionnaire was then adjusted to increase item content validity between the question context and the desired information. Therefore, the questions were clarified, and proper terminology was ensured. Four more items were also added to measure more attitudes related to collaboration with multidisciplinary teams, and the questionnaire was then resent to the experts. In the second review, all experts scored all questions with 3 or 4 without any suggestions.

Lastly, the final version was comprised of four types of questions, thirty-two in total, to determine attitudes related to HHV. Fourteen questions were about attitudes related to practice in HHV, five questions were about attitudes related to the role of ATM practitioners, seven questions were about attitudes related to the relationship with patients and their relatives, and six questions were about attitudes related to collaboration with the multidisciplinary team. There were twenty-four positive questions and eight negative questions. The detail of the final version is shown in Table 2.

The construct validity results revealed that the measurement model of the ATM students’ attitudes related to HHV was one factors measurement model, which was consisted of consecutive loading factors from practice in HHV, the role of ATM practitioners, relationships with patients and their relatives, collaboration with the multidisciplinary team. The validation model was best-fitted with a chi-square of 2.77, $P = 0.25$, GFI = 0.99 and RMSEA = 0.05. Relationships with patients and their relatives had the highest loading factors (0.48), then roles of ATM practitioners (0.44), collaboration with the multidisciplinary team (0.41), and practice in HHV had the lowest loading factors (0.32). After that, we analyzed the measurement model based on the four elements of the questionnaire. We found that all model was best-fitted with data. Details are shown in Figure 1.

Table 1. Detail of CVI for each original questionnaire item.

| Item | Expert A | Expert B | Expert C | Number in Agreement | Item CVI |
|------|----------|----------|----------|---------------------|----------|
| 1 | - | X | X | 2 | 0.67 |
| 2 | - | X | X | 2 | 0.67 |
| 3 | X | X | X | 3 | 1.00 |
| 4 | - | X | X | 2 | 0.67 |
| 5 | X | X | X | 3 | 1.00 |
| 6 | X | X | X | 3 | 1.00 |
| 7 | X | X | X | 3 | 1.00 |
| 8 | - | X | X | 2 | 0.67 |
| 9 | - | X | X | 2 | 0.67 |
| 10 | X | X | X | 3 | 1.00 |
| 11 | X | X | X | 3 | 1.00 |
| 12 | - | X | X | 2 | 0.67 |
| 13 | X | X | X | 3 | 1.00 |
| 14 | - | X | X | 2 | 0.67 |
| 15 | X | X | X | 3 | 1.00 |
| 16 | X | X | X | 3 | 1.00 |
| 17 | - | X | X | 2 | 0.67 |
| 18 | - | X | X | 2 | 0.67 |
| 19 | - | X | X | 2 | 0.67 |
| 20 | X | - | X | 2 | 0.67 |
| 21 | X | - | X | 2 | 0.67 |
| 22 | X | - | X | 2 | 0.67 |
| 23 | X | - | X | 2 | 0.67 |
| 24 | X | X | X | 3 | 1.00 |
| 25 | - | X | X | 2 | 0.67 |
| 26 | X | X | X | 3 | 1.00 |
| 27 | X | X | X | 3 | 1.00 |
| 28 | X | X | X | 3 | 1.00 |
| | | | | Average I-CVI | 0.82 |
| | | | | S-CVI | 0.46 |

I-CVI, item-level content validity index; S-CVI, scale-level content validity index, universal agreement method = 0.46; average I-CVI, average item-level content validity index, averaging method = 0.82.

Table 2. Final version of the questionnaire.

| Item | References | | | | |
|--|--|---|---|---|---------------------------------------|
| | Flaherty JH, <i>et al.</i> ⁽⁸⁾ (2002) | Denton GD <i>et al.</i> ⁽⁹⁾ (2009) | Erdemir F, <i>et al.</i> ⁽¹⁰⁾ (2011) | Puangmala N, <i>et al.</i> ⁽¹¹⁾ (2017) | Standards for ATM practitioners |
| 1. I think HHV is interesting. | | ✓ | | ✓ | |
| 2. I like the other work of ATM practitioners more than HHV.* | | | | ✓ | |
| 3. I think the characteristics of HHV are suitable for my character. | | ✓ | | ✓ | |
| 4. I think HHV is a challenging task for me. | | ✓ | | | |
| 5. I think HHV is a holistic patient care. | ✓ | ✓ | ✓ | | ✓ |

Table 2. (Con) Final version of the questionnaire.

| Item | References | | | | |
|---|--|---|---|---|---------------------------------------|
| | Flaherty JH, <i>et al.</i> ⁽⁸⁾ (2002) | Denton GD <i>et al.</i> ⁽⁹⁾ (2009) | Erdemir F, <i>et al.</i> ⁽¹⁰⁾ (2011) | Puangmala N, <i>et al.</i> ⁽¹¹⁾ (2017) | Standards for ATM practitioners |
| 6. I think taking the patient's history at home and hospital are similar. | | | | ✓ | |
| 7. I think the meeting of the multidisciplinary team before HHV does not affect their performance.* | | | | ✓ | |
| 8. After home health visiting, it makes me intend to practice more. | | | | ✓ | |
| 9. I think that home health visiting patients with disabilities causes a lot of time to work.* | | ✓ | | | |
| 10. If the team visit elderly patients' home and sometimes they don't understand each other, it is normal for me. | ✓ | | ✓ | | |
| 11. I think home health visiting spends more time than other treatments.* | | ✓ | | | |
| 12. I think HHV is the other important duty of ATM practitioner. | | | | ✓ | ✓ |
| 13. I understand the role in the HHV of ATM practitioner as well. | | | | ✓ | ✓ |
| 14. I think most relatives of patients think that the role of ATM practitioner is massaging.* | | | | ✓ | |
| 15. I believe that ATM practitioner is important for the health care of people in the community. | | | | ✓ | ✓ |
| 16. I think that home health visiting is a duty of ATM practitioner, that is valuable to patients. | | | | ✓ | ✓ |
| 17. I think that HHV is as important as procedures in the hospital. | ✓ | | ✓ | | |
| 18. I think home health visiting makes me understand the problems that affect the treatment of patients. | | | | ✓ | ✓ |
| 19. I truly know the patients' needs when visiting home. | | | | ✓ | ✓ |
| 20. I think ATM practitioners take care of patients as they were their own relatives. | | | | ✓ | |

Table 2. (Con) Final version of the questionnaire.

| Item | References | | | | |
|--|--|---|---|---|---------------------------------------|
| | Flaherty JH, <i>et al.</i> ⁽⁸⁾ (2002) | Denton GD <i>et al.</i> ⁽⁹⁾ (2009) | Erdemir F, <i>et al.</i> ⁽¹⁰⁾ (2011) | Puangmala N, <i>et al.</i> ⁽¹¹⁾ (2017) | Standards for ATM practitioners |
| 21. I think ATM practitioners take care of the patients' relatives as if they were their own relatives. | | | | ✓ | |
| 22. I think the relatives tell me the patient's health that expresses the trust and expectation of my treatment. | | | | ✓ | |
| 23. I think that ATM practitioners do not like to answer the questions of relatives of patients.* | ✓ | | ✓ | ✓ | |
| 24. I think that patients cooperate with ATM practitioners very well. | | | | ✓ | ✓ |
| 25. I think that relatives of patients cooperate with ATM practitioners very well. | | | | ✓ | ✓ |
| 26. I think patients treat me equally as other health professional personnel. | | | | ✓ | |
| 27. I think other health professional personnel speak to honor me. | | | | ✓ | |
| 28. I understand the role in the HHV of other health professional personnel as well. | | | | ✓ | ✓ |
| 29. I think HHV with a multidisciplinary team lets me know how to work as a team member. | | | | ✓ | ✓ |
| 30. I think that HHV with a multidisciplinary team makes me solves the patients' problems better. | | | | ✓ | ✓ |
| 31. I think that HHV with a multidisciplinary team makes me stress.* | | | | ✓ | |
| 32. I do not know why ATM practitioners must visit the home although other health professionals work similarly to me.* | | | | ✓ | |

*Negative item

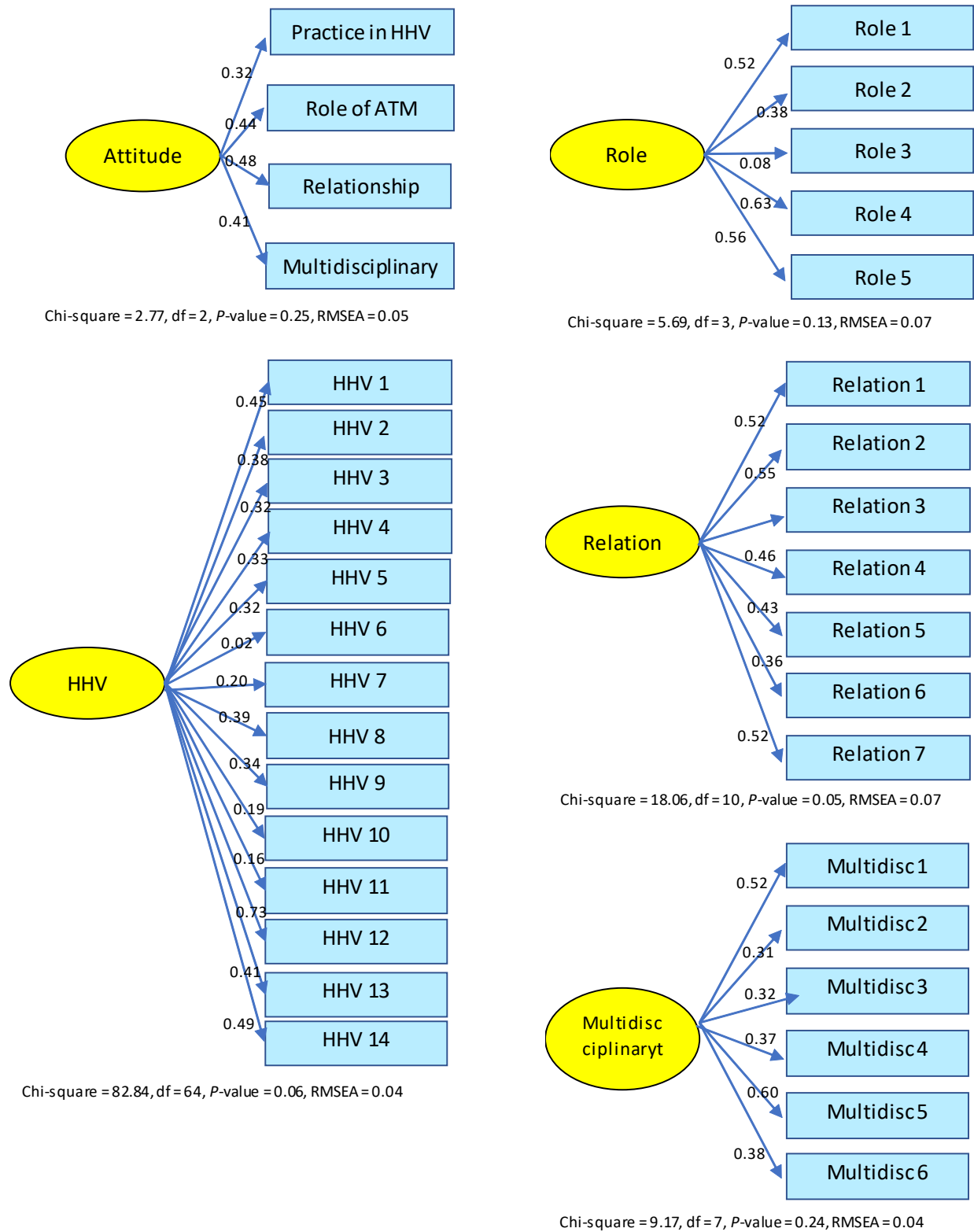


Figure 1. The measurement model of the ATM students' attitudes related to HHV.

Internal consistency and reliability were assessed in which Cronbach's alpha coefficient was applied. Results of the reliability test with the percentage of agreement for each item are shown in Table 3. For each aspect of ATM students' attitudes related to the HHV questionnaire, Cronbach's alpha coefficient was more than 0.8. Except for the attitudes related

to the role of ATM practitioners, Cronbach's alpha coefficient was 0.79.

Stability was assessed by the two-way random-effect model of intraclass correlation coefficient with the one-week test-retest method. It was 0.90 with statistically significant ($P < 0.001$).

Table 3. Cronbach's alpha coefficient in each aspect of ATM students' attitudes related to HHV questionnaire.

| Each aspect of ATM students' attitudes related to HHV questionnaire | Cronbach's alpha coefficient |
|--|------------------------------|
| 1. Attitudes related to practice in HHV | 0.91 |
| 2. Attitudes related to the role of ATM practitioners | 0.79 |
| 3. Attitudes related to the relationship with patients and patient's relatives | 0.86 |
| 4. Attitudes related to work with the multidisciplinary team | 0.92 |

Table 4. Percentage of agreement for each item.

| Item | Participant who answers in possible answers (n = 30) | | | | | Median (IQR) | Percentage of agreement(%) |
|------|---|----|----|----|----|-----------------|-------------------------------|
| | 1 | 2 | 3 | 4 | 5 | | |
| Q1 | 0 | 0 | 2 | 17 | 11 | 4 (5,4) | 93.3 |
| Q2* | 0 | 7 | 13 | 10 | 0 | 3 (4,3) | 23.3 |
| Q3 | 0 | 2 | 24 | 4 | 0 | 3 (3,3) | 13.3 |
| Q4 | 0 | 0 | 7 | 17 | 6 | 4 (4,4) | 76.7 |
| Q5 | 0 | 0 | 3 | 14 | 13 | 4 (5,4) | 90.0 |
| Q6 | 0 | 7 | 18 | 2 | 3 | 3 (3,3) | 16.7 |
| Q7* | 15 | 14 | 1 | 0 | 0 | 1.5 (2,1) | 96.7 |
| Q8 | 0 | 1 | 13 | 13 | 3 | 4 (4,3) | 53.3 |
| Q9* | 16 | 13 | 1 | 0 | 0 | 1 (2,1) | 96.7 |
| Q10 | 2 | 10 | 12 | 5 | 1 | 3 (3,2) | 20.0 |
| Q11* | 5 | 12 | 10 | 3 | 0 | 2 (3,2) | 56.7 |
| Q12 | 0 | 0 | 9 | 10 | 11 | 4 (5,3) | 70.0 |
| Q13 | 0 | 3 | 22 | 5 | 0 | 3 (3,3) | 16.7 |
| Q14* | 0 | 0 | 1 | 12 | 17 | 5 (5,4) | 0.0 |
| Q15 | 0 | 0 | 4 | 16 | 10 | 4 (5,4) | 86.7 |
| Q16 | 0 | 0 | 5 | 17 | 8 | 4 (5,4) | 83.3 |
| Q17 | 1 | 1 | 7 | 12 | 9 | 4 (5,3) | 70.0 |
| Q18 | 0 | 0 | 5 | 10 | 15 | 4.5 (5,4) | 83.3 |
| Q19 | 0 | 0 | 6 | 15 | 9 | 4 (5,4) | 80.0 |
| Q20 | 0 | 2 | 11 | 12 | 5 | 4 (4,3) | 56.7 |
| Q21 | 0 | 3 | 11 | 11 | 5 | 4 (4,3) | 53.3 |
| Q22 | 0 | 0 | 2 | 14 | 14 | 4 (5,4) | 93.3 |
| Q23* | 10 | 17 | 2 | 1 | 0 | 2 (2,1) | 90.0 |
| Q24 | 0 | 0 | 19 | 9 | 2 | 3 (4,3) | 36.7 |
| Q25 | 0 | 0 | 18 | 10 | 2 | 3 (4,3) | 40.0 |
| Q26 | 0 | 3 | 9 | 17 | 1 | 4 (4,3) | 60.0 |
| Q27 | 0 | 0 | 8 | 17 | 5 | 4 (4,3) | 73.3 |
| Q28 | 0 | 1 | 16 | 12 | 1 | 3 (4,3) | 43.3 |
| Q29 | 0 | 0 | 3 | 10 | 17 | 5 (5,4) | 90.0 |
| Q30 | 0 | 0 | 2 | 8 | 20 | 5 (5,4) | 93.3 |
| Q31* | 8 | 14 | 7 | 1 | 0 | 2 (3,1) | 73.3 |
| Q32* | 6 | 14 | 8 | 2 | 0 | 2 (3,2) | 66.7 |

*Negative item

**% of agreement: percentage of participants give score 4 or 5 in each positive item or score 1 or 2 in each negative item

Discussion

This study was a pilot study to develop a questionnaire for ATM students to evaluate their attitude towards HHV. After a validity and reliability process, the final questionnaire consisted of 32 items that obtained moderate to high reliability.

Generally, Cronbach's coefficients of each aspect of the questionnaire demonstrated high internal consistency (0.79 - 0.92). We can conclude that the internal consistency of the questionnaire was acceptable. Responses from the participants as a pilot group showed some critical issues, such as people's perceptions about ATM practitioners' roles. Because there are many people who work in TTM service in several settings, the related organizations should inform the public that there are many people in TTM services such as ATM practitioners, TTM practitioners, and TTM assistants who are allowed to practice in Thai massage under the supervision of other licensed practitioners.⁽²⁾ They also should plan effective strategies for promoting the role with the herbal medicine more. Another concern raised by the replies was the third-year students' inability to comprehend the characteristics of HHV because previously they had never encountered the patients.

In conclusion, our developed tool has a high level of validity and reliability for ATM students. However, our study has some limitations. The generalizability of this questionnaire is limited to a specific group. Therefore, it could be applied for future studies, such as in another context. Reliability and validity measures are recommended if the questionnaire is used for other populations. Although this study is the first pilot study to develop the questionnaire accessing attitude towards HHV in ATM students; the questionnaire might help further research improve the students' performance about caring for patients with chronic diseases, patients' satisfaction, and the development of the teaching and learning to develop them for their professional.

Conclusion

The present study developed and validated the questionnaire for evaluating attitudes towards home health visits in ATM students. The questionnaire provides a valuable measure of the students' performance in caring for chronic diseases patients and patient satisfaction in daily practice and research settings. The questionnaire shows good to excellent internal consistency in each aspect of ATM students' attitudes, as well as excellent test-retest reliability.

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Conflict of interest

The authors, hereby, declare no personal or professional conflicts of interest relating to any aspect of this study.

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