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**Original article**

# The Vietnamese version of the constitution in Chinese medicine questionnaire (CCMQ): validity and reliability

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**Abstract:** ***Introduction:*** Body constitution (BC) plays an important role in preserving health and reducing risk of diseases depending on each person's physical characteristics. Classification of BC is almost based on the Constitution in Chinese Medicine Questionnaire (CCMQ). In Vietnam, there is still no questionnaire survey to assess the BC. Therefore, this study aims to adapte and validate the Vietnamese version of CCMQ. ***Methods:*** 2 phases of the study: the first phase constituted the translation with cross-cultural adaptation of CCQM into Vietnamese according to Guillemin et al; the second phase assessed the reliability and validity of the Vietnamese CCMQ version based on a cross-sectional study. ***Results:*** Phase 1 formed the final Vietnamese CCMQ version in which face validity and content validity are incorporated. Seven traditional medicine practitioners confirmed the content validity (CVI: 57%–100%). The face validity of the scale is qualified. In phase 2, 455 participants aged 18 years old or older were enrolled in this study from 01/2021 – 06/2021 in Ho Chi Minh City. Regarding the criterion validity, the correlation coefficient between Vietnamese CCMQ and SF-36 was 0.67 for the Neutral type and -0.31 to -0.57 for the rest. The internal consistency varied from 0.70 to 0.83 measured by Cronbach's alpha. The test-retest reliability varied from 0.63 to 0.90 for each of the 9 sub-scales and from 0.40 to 0.68 for each of the 60 questions. ***Conclusions:*** The Vietnamese version of CCMQ has good reliability and validity, which provides a strong basis for future researches on BC of Vietnamese Traditional Medicine.

**Keywords:** Constitution in Traditional Medicine; Vietnamese version of CCMQ.

## 1. INTRODUCTION

Body constitution (BC) in Traditional Medicine is formed by the innate state combined with the lifestyle, geographical environment and climate of each individual. BC greatly affects the health and disease of each person, so it is essential to build a set of questions to scientifically identify BC types according to Traditional Medicine. In Traditional Medicine from ancient times up to now, there are many classifications of BC types. Ancient times had a classification of 25 BC types, modern times there are classification of 4, 5, 6, 7, 9 and 12 BC types [1, 2]. Among them, Wang's classification of 9 BC types for population groups built from many studies over the past few decades, has proven to be clinically and practically useful. The BC types classified by Wang include: Neutral, Qi-deficiency, Yang-deficiency, Yin-deficiency, Phlegm-dampness, Dampness-heat, Blood-stasis, Qi-depression and Inherited-special type. Except for the Neutral constitution type that represents an overall well-being, the remaining 8 BC types are the unbalanced constitution types characteristic of the group of individuals susceptible to a

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number of respective diseases [3]. Based on the concept and the constituent elements of nine BC types, Wang et al developed a new Constitution in Chinese Medicine Questionnaire (CCMQ) consisting of 60 standardized questions [4]. The CCMQ is mainly applied to health promotion and clinical practice, especially in Traditional Medicine. The validity, reliability and content value of the CCMQ have been proven and developed in many studies in different communities and countries [3, 5, 6, 7]. The lifestyle, language, health and culture of Vietnam may be different from the Chinese community, so the content, validity, and reliability of the CCMQ need to be assessed and standardized before being introduced to the Vietnamese community.

Therefore, this study aims to translate to and complete the Vietnamese version of CCMQ, in concurrent with assessing the reliability and the validity of this questionnaire. The scale's validity is assessed by determining the correlation between CCMQ and SF-36. The SF-36 is a general scale of quality of life, which has been translated, culturally adapted, and considered as a reliable tool to assess the quality of life for the Vietnamese population [8]. In addition, this standardized questionnaire is the premise for future constitutional studies in Vietnam.

## 2. MATERIALS AND METHOD

### 2.1. Study setting and participants

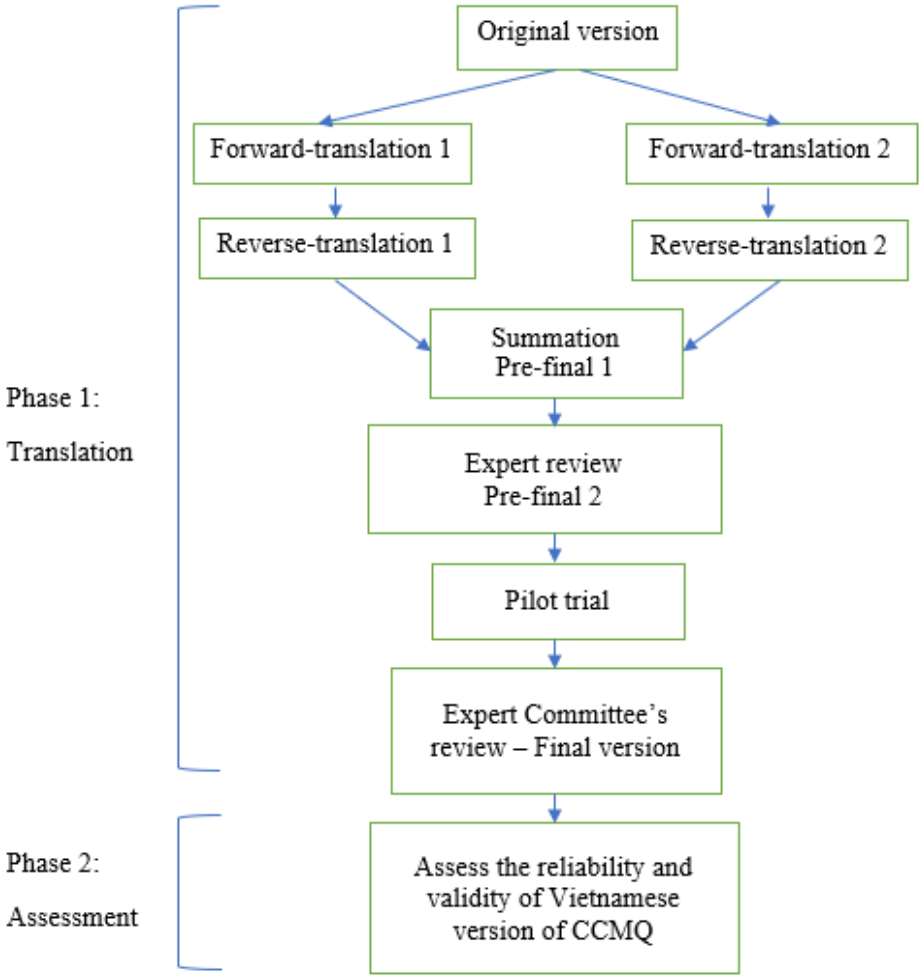


**Figure 1.** Two phases of study

This cross-sectional study was carried out in 2 phases in Ho Chi Minh City from January to June 2021. In the first phase, we translated the questionnaire into Vietnamese language, in concurrent with assessing the content validity and face validity. The second phase assessed the reliability and validity of the Vietnamese version of CCMQ. During phase 1 the process of translation and cross-cultural adaptation of the CCMQ was performed as described by Guillemin et al [9, 10] and Wild et al [11] including 5 steps: forward translation, reverse translation, summation, expert review, and pilot trial. Step 1 – forward translation: The original version of the CCMQ was independently translated to Vietnamese by two local translators fluent in Chinese. One of them was familiar with the CCMQ while the other was not. In particular, a medical practitioner who has experience of evaluating BC provided a translation from a professional point of view while another person who had no experience in the field of research made a translation in general public. The translated versions of the CCMQ were designated T1 and T2. Step 2 – reverse translation: T1 and T2 were separately back-translated to Chinese and designated as BT1 and BT2. The reverse translation is conducted by two translators who were blinded to the original CCMQ version and did not participate in the previous period. Step 3 – summation: Above four

translators compared T1, T2, BT1, BT2 with the original version of the CCMQ to correct all discrepancies and synthetize the "pre-final 1" version of the CCMQ. Step 4 – expert review: This "pre-final 1" version was reviewed by an expert board, who graduated from a university majoring in Traditional Medicine with a master's degree or higher and ≥ 5 years of experience in practicing medical treatment or doing research on Traditional Medicine. Lynn (1986) [12] recommended using between 5 and 10 experts in the content validation process; therefore, we selected 7 Traditional Medicine experts from January 15, 2021 to January 31, 2021 in our study. Content validity is integrated into the translation stage and evaluated by experts as suggested by Conway et al [13]. The content validity indexes (CVI), the proportion of subjects who gave a positive rating, was assessed based on clarity and relevance of each item [12]. Subsequently, a "pre-final 2" version of the CCMQ was produced, this version was used in the step 5 – pilot trial. The purpose of pilot trial was to identify problematic questions in the questionnaire and offer solutions to make such questions easier to understand. Pilot trial assessed the face validity of CCMQ including understandability, clarity, acceptability, and purpose [14, 15]. Finally, a panel of nationwide 10 traditional medicine specialists (with a doctorate, second-degree specialty, or over; working for at least 5 years in the field of Traditional Medicine) reviewed and adjusted to create a complete final Vietnamese version of CCMQ. The second phase was to assess the reliability and the validity of Vietnamese version of CCMQ. The reliability included internal consistency and test-retest reliability while the validity assessed criterion validity. Phase 2 conducted a descriptive cross-sectional study with inclusion criteria involving permanent residents in Ho Chi Minh City who aged 18 years old or older are willing to participate in research with the ability to independently communicate and follow the instructions. Exclusion criteria were people with mental illness, behavior problems, serious illnesses, or inability to understand or complete the study questionnaire. All volunteers who took part in this study were recruited from the general population of 24 districts of Ho Chi Minh City. Study subjects participated in an interview and had filled in the Vietnamese version of the CCMQ questionnaire and SF-36 health survey to assess criterion validity. After that, they would be re-interviewed after 4 weeks for the test-retest reliability assessment [16]. The whole process of this study is summarized in Figure 1.

### 2.2. Data collection

In phase 1, the pilot study was conducted on 30 people in the residential community of Ho Chi Minh City. We recruited volunteers from the general population in the Ho Chi Minh City with the same inclusion and exclusion criteria as the official study. Participants were interviewed using a structured set of prepared questions, the subjects were asked to rate the ease of understanding of the Vietnamese version of CCMQ, assess the difficulty in the process of answering, express the purpose of the scale, and offer the adjustment output (if any). Research subjects could directly write comments on the answer sheet. In phase 2, to evaluate the reliability and validity of the Vietnamese version of CCMQ, a cross-sectional study was performed on 455 subjects with the contents of the Vietnamese version of CCMQ and the Short Form Health Survey SF-36. We also recruited volunteers from the general population in Ho Chi Minh City. Participants independently completed pre-prepared paper-based edited questionnaires that included the Vietnamese version of the CCMQ and the SF-36 quality of life survey. It was required that all questions must be completed prior to submission. To assess the test-retest reliability of the CCMQ questionnaire, all volunteers received an invitation to participate in the second survey carried out at 4 weeks after the initial assessment and 210 subjects agreed to take part in. Then, 4 weeks later, those participants were asked to fill out the same questionnaire again on paper. Data were collected only with the agreement of volunteers using informed consent.

### 2.3. Sample size calculation

In step 4 – expert review of the first phase, Lynn and Rubio recommend a minimum of 3 experts and a maximum of 10 experts [12]. Our study had 7 practioners. In step 5, Beaton et al recomended a sample size with a minnimum of 30 participants and maximum of 40 participants [17]. Our sample size was 30. The sample size estimations were based on the subject to item ratio, which is a method that is frequently used to determine the required sample size needed for scale validation [18]. A review of 114 studies on newly-developed scale validation found that the subject to item ratio was used to determine sample sizes in 92% of the articles, and the median subject to item ratio was 4 with a minimum of 1 and a maximum of 26 [19]. There were 60 items in the Traditional Medicine constitution scale, and the subject to item ratio was set at 7, therefore 420 subjects were needed. Our study had 455 subjects.

### 2.4. Study instruments and outcome measures

Constitution in Chinese Medicine Questionnaire (CCMQ). The Constitution in Chinese Medicine Questionnaire (CCMQ) consists of 60 items to classify a person into one or more of nine BC types: Neutral (8 Items), Qi-deficiency (8 Items), Yang-deficiency (7 Items), Yin-deficiency (8 Items), Phlegm-dampness (8 Items), Dampness-heat (6 Items), Blood-stasis (7 Items), Qi-depression (7 Items), and Inherited-special (7 Items). Coexistence of multiple imbalanced BC types was possible which is consistent with the Traditional Medicine theories. The scoring algorithm proposed in the original CCMQ was adopted in this study. A higher score in the CCMQ BC scale indicates a higher likelihood of the specific BC type, and a score of 30 is set as the threshold for the case definition [4].

SF-36: in order to evaluate criterion validity, we conducted the survey of SF-36 (Vietnamese version) which includes the physical and mental component summary (abbreviated by PCS and MCS later) at the same time. Scores range from 0 to 100, with higher scores indicating better subjective health status. We used the SF-36 questionnaire with Vietnamese translation, which has been translated, culturally adapted, and assessed as a reliable tool to assess the quality of life for the Vietnamese population [8]. The Vietnamese translation of SF-36 includes 36 questions measuring 8 areas: general health, physical functioning, role physical, bodily pain, mental health, role emotional, vitality, and social functioning. In which, the first 4 areas assess the physical health, and the rest assess the mental health. The quality of life score is calculated as the average score of 8 areas. The results would be converted to a scale of 100 according to the convention table. A higher score reflects a

better quality of life and vice versa [20]. It was hypothesized that subjects in the Neutral constitution would have the highest SF-36 scores because they were thought to be the healthiest. There is a positive correlation between the Neutral type and SF-36 scale, the higher scores of both of them indicate a better health. The eight unbalanced constitutional types of CCMQ are negatively correlated with SF-36 scale, so these types have a close association with lower quality of life. The SF-36 questionnaire was used in the study to determine the validity of the Vietnamese version of the CCMQ questionnaire [5].

### 2.5. Data analysis

Values were presented as Mean ± Standard deviation. Validity in this study included content validity, face validity, and criterion validity. Reliability in this study included test-retest reliability and internal consistency. In which, content validity and face validity were integrated into the first phase of the study; criterion validity and reliability (test-retest reliability and internal consistency) were carried out in phase 2 of the study. Specifically, in step 4 - professional assessment of phase 1, a content validity assessment form was sent separately to each expert along with an open letter instructing how to evaluate. Either relevancy or clarity was assessed for each question according to its role based on the Likert scale of 4 choices with the following meanings: the first is "Unusable, not meant to be (or not clear)", the second is "Not usable yet, needs a lot of tweaking", the third is "Can be used with a few minor tweaks", the fourth is "Can be used without modification" [21, 22]. The content value is determined through the Content Validity Index for Items (I-CVI). The I-CVI index is calculated as the ratio between the number of experts assessed "usable" and the total number of experts. The threshold value of I-CVI was 1.00 when the number of judges was 5 or less, and 0.80 when there were 6 or more judges. Our study had 7 medical practitioners, corresponding to the I-CVI value greater than 0.80, indicating adequate levels of clarity [23]. The face validity was determined by 30 volunteers in step 5 of phase 1 (pilot trial). The face validity included 4 criteria: The ease of understanding of the Vietnamese version of the CCMQ scale; The difficulties in answering questions in the scale; Proposing to adjust according to the subject's point of view to improve the quality of the translation and be suitable for Vietnamese people; Opinions of the research subjects about the purpose of the CCMQ scale and the issues mentioned in the content of the CCMQ scale. Criterion validity was assessed in phase 2 of the study, namely Concurrent validity, which was assessed using bivariate correlation analyses between SF-36 and the scores of CCMQ in order to verify whether the results of the scale were consistent with traditional medicine theory.

Reliability was also assessed in phase 2 of the study. Internal consistency was evaluated by Cronbach's alpha coefficient for each of the 9 sub-scales. In which, Cronbach's alpha coefficient was accepted when the threshold was ≥ 0.70 [24]. In contrast, Cronbach's alpha coefficient was too high suggesting that some questions in the scale overlapped each other or had the same idea, the maximum recommended threshold was ≤ 0, 90 or ≤ 0.95 [25]. Test-retest reliability was evaluated by the weighted Kappa coefficient for each question and Spearman correlation coefficient for each sub-scale. It was generally said to be fair if a weighted kappa coefficient was 0.4 – 0.75; and good if it was 0.75 or greater [26, 27]. For Spearman correlation, it was said to be good if it was 0.6 or greater [28, 29]. Statistics analysis was performed by SPSS 20.0 and the significant level was set at $p < 0.05$.

### 2.6. Ethical considerations

This study was approved by Council of Ethics in Biomedical Research at University of Medicine and Pharmacy at Ho Chi Minh City on January 28th 2020, No. 52/HĐĐĐ-ĐHYD. All the participants signed an informed consent form in which the personal identification of research objects was not reported (name, address).

## 3. RESULTS

### 3.1. The first phase comprised of translating and assessing 2 indices of validity (content validity, face validity) of the Vietnamese version of CCMQ

The "pre-final 1" of Vietnamese version of CCMQ was created after the completion of 03 steps – forward translation, reverse translation and summation. The content validity was considered in step 4 (Expert review) with a group of experts consisting of 7 Traditional Medicine practitioners, including 4 Doctors of Medicine and 3 Masters of Medicine with the average number of years of experience was 9 ± 1.4 years. There were 57 questions in the CCMQ which have satisfactory CVIs (I-CVI ≥80%) with clarity, consistency of response options, and relevance with health in all items. Among 3 questions with CVI <80%, question 3 "Bạn có dễ bị hụt hơi (khó thở được) không?" (Did you suffer from shortness of breath (fast breathing or difficulty in breathing)) has the lowest I-CVI of 57%, some comments that "khó thở" (shortness of breath) is easily misunderstood as pathological dyspnea, "khó thở được" (difficulty in breathing) is unclear. Question 1 "Bạn có cảm thấy sức khỏe dồi dào không?" (Were you energetic?) and question 26 "Bạn có bị ho hay suyễn do chuyển mùa, thay đổi nhiệt độ hoặc có mùi khác thường không?" (Did you have a cough or asthma caused by seasonal changes, changes in temperature, or an unusual smell?) were evaluated by some traditional medicine doctors with an I-CVI of 71% (Table 2). After being considered and reviewed by practioner committee, the pre-final 2 version was conducted and used for pilot trial. Step 5 – pilot trial: 30 participants included 13 males (43.3%) and 17 females (56.7%). Subjects aged 18 – 82 years old, the mean age was 48.5 ± 18.8. The educational level of participants ranged from nil to tertiary. Evaluating the face validity was based on the responses of 30 participants. All subjects agreed that the contents of the questions in the scale were suitable for the previously announced research with the purpose of assessing the BC types of people in the community, showing the face validity of the scale measured well. Participants had no difficulty in reading and understanding the contents of the questions and were able to complete all 60 questions within 15 minutes. In which, 76.7% of the participants rated the scale from "easy to understand" to "very easy to understand". Participants commented to edit 5 sentences. Question 50 "Rêu lưỡi của bạn có dày nhớt hoặc hơi dày không?" (Was your tongue coating sticky or slightly thick?) was evaluated, the main feedbacks were that such a question is hard to understand the words "rêu lưỡi" (tongue coating), "nhớt" (sticky) and "hơi dày" (slightly thick). Question 4 "Bạn có dễ hồi hộp đánh trống ngực không?" (Did you get palpitations easily?), question 35 "Màu

môi của bạn có đỏ hơn người bình thường không?" (Were your lips redder than others?), question 53 "Bạn có thể thích ứng với những thay đổi của môi trường tự nhiên và xã hội bên ngoài không?" (Could you adapt yourself to external natural or social environment change?) and question 56 "Bạn có cảm thấy phân của mình dính và đi tiêu có cảm giác không hết phân không?" (Did you pass sticky stools and /or feel that your bowel movement is incomplete?) were rated as unclear. These comments were acknowledged and then edited by an expert board of 10 Traditional Medicine specialists nationwide to complete the final content of the Vietnamese version of CCMQ. An expert board of 10 nationwide Traditional Medicine specialists completed the final content of the Vietnamese version of CCMQ. This panel of 10 experts included 5 experts from the North of Vietnam and 5 from the South of Vietnam; there were 2 Associate Professors, 9 Doctors of Medicine and 1 Second Degree Specialist with the average number of years of experience was 11.8 ± 3.9 years.

**Table 1.** Calculation of I-CVI and S-CVI for items of CCMQ (Step 4)

| Number of Question | Number of expert | Relevance of the questions | | Clarity of the questions | | Interpretation |
|---|---|---|---|---|---|---|
| | | Number of ratings of 3 or 4 | I-CVI | Number of ratings of 3 or 4 | I-CVI | |
| 1 | 7 | 6 | 0.86 | 5 | 0.71 | Need for Revision |
| 2 | 7 | 7 | 1.00 | 7 | 1.00 | Appropriate |
| 3 | 7 | 4 | 0.57 | 4 | 0.57 | Need for Revision |
| 4 | 7 | 7 | 1.00 | 7 | 1.00 | Appropriate |
| 5 | 7 | 7 | 1.00 | 7 | 1.00 | Appropriate |
| 6 | 7 | 7 | 1.00 | 7 | 1.00 | Appropriate |
| 7 | 7 | 6 | 0.86 | 6 | 0.86 | Appropriate |
| 8 | 7 | 7 | 1.00 | 7 | 1.00 | Appropriate |
| 9 | 7 | 7 | 1.00 | 7 | 1.00 | Appropriate |
| 10 | 7 | 7 | 1.00 | 7 | 1.00 | Appropriate |
| 11 | 7 | 7 | 1.00 | 7 | 1.00 | Appropriate |
| 12 | 7 | 7 | 1.00 | 7 | 1.00 | Appropriate |
| 13 | 7 | 6 | 0.86 | 6 | 0.86 | Appropriate |
| 14 | 7 | 6 | 0.86 | 6 | 0.86 | Appropriate |
| 15 | 7 | 7 | 1.00 | 7 | 1.00 | Appropriate |
| 16 | 7 | 6 | 0.86 | 6 | 0.86 | Appropriate |
| 17 | 7 | 7 | 1.00 | 7 | 1.00 | Appropriate |
| 18 | 7 | 7 | 1.00 | 7 | 1.00 | Appropriate |
| 19 | 7 | 7 | 1.00 | 7 | 1.00 | Appropriate |
| 20 | 7 | 7 | 1.00 | 7 | 1.00 | Appropriate |
| 21 | 7 | 7 | 1.00 | 7 | 1.00 | Appropriate |
| 22 | 7 | 6 | 0.86 | 7 | 1.00 | Appropriate |
| 23 | 7 | 7 | 1.00 | 7 | 1.00 | Appropriate |
| 24 | 7 | 7 | 1.00 | 7 | 1.00 | Appropriate |
| 25 | 7 | 7 | 1.00 | 7 | 1.00 | Appropriate |
| 26 | 7 | 6 | 0.86 | 5 | 0.71 | Need for Revision |
| 27 | 7 | 7 | 1.00 | 7 | 1.00 | Appropriate |
| 28 | 7 | 6 | 0.86 | 6 | 0.86 | Appropriate |
| 29 | 7 | 7 | 1.00 | 7 | 1.00 | Appropriate |
| 30 | 7 | 7 | 1.00 | 7 | 1.00 | Appropriate |
| 31 | 7 | 6 | 0.86 | 6 | 0.86 | Appropriate |
| 32 | 7 | 7 | 1.00 | 7 | 1.00 | Appropriate |
| 33 | 7 | 7 | 1.00 | 7 | 1.00 | Appropriate |
| 34 | 7 | 7 | 1.00 | 7 | 1.00 | Appropriate |
| 35 | 7 | 7 | 1.00 | 7 | 1.00 | Appropriate |
| 36 | 7 | 6 | 0.86 | 6 | 0.86 | Appropriate |
| 37 | 7 | 7 | 1.00 | 7 | 1.00 | Appropriate |
| 38 | 7 | 7 | 1.00 | 7 | 1.00 | Appropriate |
| 39 | 7 | 7 | 1.00 | 7 | 1.00 | Appropriate |
| 40 | 7 | 7 | 1.00 | 7 | 1.00 | Appropriate |
| 41 | 7 | 7 | 1.00 | 7 | 1.00 | Appropriate |
| 42 | 7 | 7 | 1.00 | 7 | 1.00 | Appropriate |
| 43 | 7 | 7 | 1.00 | 7 | 1.00 | Appropriate |
| 44 | 7 | 7 | 1.00 | 7 | 1.00 | Appropriate |
| 45 | 7 | 6 | 0.86 | 6 | 0.86 | Appropriate |
| 46 | 7 | 7 | 1.00 | 7 | 1.00 | Appropriate |
| 47 | 7 | 7 | 1.00 | 7 | 1.00 | Appropriate |
| 48 | 7 | 6 | 0.86 | 6 | 0.86 | Appropriate |
| 49 | 7 | 7 | 1.00 | 7 | 1.00 | Appropriate |
| 50 | 7 | 7 | 1.00 | 7 | 1.00 | Appropriate |
| 51 | 7 | 7 | 1.00 | 7 | 1.00 | Appropriate |
| 52 | 7 | 7 | 1.00 | 6 | 0.86 | Appropriate |
| 53 | 7 | 7 | 1.00 | 7 | 1.00 | Appropriate |
| 54 | 7 | 7 | 1.00 | 7 | 1.00 | Appropriate |
| 55 | 7 | 7 | 1.00 | 7 | 1.00 | Appropriate |
| 56 | 7 | 7 | 1.00 | 7 | 1.00 | Appropriate |
| 57 | 7 | 7 | 1.00 | 7 | 1.00 | Appropriate |
| 58 | 7 | 6 | 0.86 | 6 | 0.86 | Appropriate |
| 59 | 7 | 7 | 1.00 | 7 | 1.00 | Appropriate |
| 60 | 7 | 6 | 0.86 | 6 | 0.86 | Appropriate |
| | | S-CVI/AVE 0.96<br>S-CVI/UA 0.75 | | S-CVI/AVE 0.95<br>S-CVI/UA 0.75 | | |

**Table 2.** The CVIs of CCMQ rated by Traditional medicine doctors (Step 4)

| Unsatisfactory questions | CVI (%) of traditional medicine doctors (n = 7) | Comment |
|---|---|---|
| (1) Were you energetic?<br>*(Bạn có cảm thấy sức khỏe dồi dào không?)* | CVI = 71 | - Not clear "sức khỏe dồi dào" (energetic)<br>- Can be replaced with "cảm thấy trong người khỏe không?" (Were you feeling well?) |
| (3) Did you suffer from shortness of breath (fast breathing or difficulty breathing)?<br>*(Bạn có dễ bị hụt hơi (khó thở được) không?)* | CVI = 57 | - Remove the word "được"<br>- Difficulty breathing can easily be misunderstood as pathological dyspnea. |
| (26) Did you have a cough or asthma caused by seasonal changes, changes in temperature, or an unusual smell?<br>*(Bạn có bị ho hay suyễn do chuyển mùa, thay đổi nhiệt độ hoặc có mùi khác thường không?)* | CVI = 71 | - Describe the symptoms of asthma such as coughing and wheezing.<br>- It is unclear "hoặc có mùi khác thường" (or has an unusual odor) that may be changed to "hay tiếp xúc với mùi bất thường" (or exposed to an unusual odor) or "do mùi khác thường" (due to an unusual odor) |

**Table 3.** Baseline characteristics of the participants in the study

| Characteristic | Pilot test (n = 30) | Total subjects (n = 455) | Test-retest subjects (n = 210) |
|---|---|---|---|
| **Age** | 48.5± 18.8 | 30.4 ±13.1 | 28.1 ± 8.7 |
| **Sex** | Male: 13 (43.3%)<br>Female: 17(56.7%) | Male: 198 (43.5%)<br>Female: 257 (56.5%) | Male: 93 (44.3%)<br>Female: 117 (55.7%) |
| **Education** | | | |
| Nil | 2 (6.7%) | 7 (1.5%) | 1 (0.5%) |
| Primary | 4 (13.3%) | 49 (10.8%) | 22 (10.5%) |
| Secondary | 6 (20.0%) | 106 (23.3%) | 74 (35.2%) |
| Tertiary | 18 (60.0%) | 293 (64.4%) | 113 (53.8 %) |
| **Response time** (minutes) | | 12.3± 4.7 | |

**Table 4.** Score distribution of the nine sub-scales of the Vietnamese version of CCMQ

| Sub-scales | Mean ± SD | Min | Max |
|---|---|---|---|
| Neutral | 62.70 ± 14.51 | 12.5 | 96.88 |
| Qi-deficiency | 38.37 ±15.37 | 0 | 87.50 |
| Yang-deficiency | 22.84 ± 17.47 | 0 | 79.00 |
| Yin-deficiency | 24.21± 16.24 | 0 | 81.25 |
| Phlegm-dampness | 24.15 ±16.19 | 0 | 75.00 |
| Dampness-heat | 28.25±16.77 | 0 | 79.17 |
| Blood-stasis | 29.31 ±16.40 | 0 | 79.17 |
| Qi-depression | 31.58 ±17.32 | 0 | 92.86 |
| Inherited-special | 27.98 ±17.76 | 0 | 82.14 |

### 3.2. The second phase assessed the reliability and validity of the Vietnamese version of CCMQ

455 subjects included 198 males (43.5%) and 257 females (56.5%). The average age was 30.4 ± 13.1 years, the youngest was 18 and the oldest was 87 years of age. Among 455 subjects, 98.9 % of subjects could be classified into at least one BC type. The average time for response was 12.3 ± 4.7 minutes (Table 3)**.** The score of each sub-scale of CCMQ was shown on Table 4. During the follow-up phase, there were 210 responders with 93 males (44.3%) and 117 females (55.7%). The test-retest reliability of the Vietnamese CCMQ varied 0.63 to 0.9 for each of the 9 sub-scales and 0.40 to 0.68 for each of the 60 questions (Table 5). The internal consistency of the CCMQ scale is shown in Table 6. The standardized Cronbach's alpha coefficient varied from 0.70 to 0.83 for each of the 9 sub-scales. Regarding the criterion validity, the correlation coefficient between the score of Neutral type and SF-36 scale was 0.61 in the physical health score (PCS), 0.7 in the mental health score (MCS), and 0.67 in the quality of life score SF-36. The correlation coefficient between the scores of 8 unbalanced types and the SF-36 scale is from -0.27 to -0.52 in a physical health score (PCS), from -0.33 to -0.6 in a mental health score (MCS), and from -0.31 to -0.57 in quality of life score SF-36 (Table 7).

**Table 5.** Test-retest reliability of nine sub-scales and sixty questions

| Sub-scale | Question number | Weighted kappa (Question) | Spearman correlation (Sub-scale) |
|---|---|---|---|
| Neutral | 1 | 0.58 | 0.78 |
| | 2 | 0.48 | |
| | 7 | 0.44 | |
| | 8 | 0.47 | |
| | 22 | 0.57 | |
| | 23 | 0.65 | |
| | 53 | 0.49 | |
| | 54 | 0.62 | |
| Qi-deficiency | 2 | 0.48 | 0.73 |
| | 3 | 0.60 | |
| | 4 | 0.43 | |
| | 5 | 0.46 | |
| | 6 | 0.46 | |
| | 7 | 0.44 | |
| | 27 | 0.46 | |
| Yang-deficiency | 18 | 0.55 | 0.90 |
| | 19 | 0.62 | |
| | 20 | 0.55 | |
| | 22 | 0.57 | |
| | 23 | 0.65 | |
| | 52 | 0.55 | |
| | 55 | 0.49 | |
| | 58 | 0.43 | |
| Yin-deficiency | 17 | 0.54 | 0.73 |
| | 21 | 0.50 | |
| | 29 | 0. 40 | |
| | 35 | 0.48 | |
| | 36 | 0.65 | |
| | 38 | 0.50 | |
| | 44 | 0.50 | |
| | 46 | 0.44 | |
| Phlegm-dampness | 14 | 0.6 | 0.81 |
| | 16 | 0.43 | |
| | 28 | 0.45 | |
| | 42 | 0.50 | |
| | 47 | 0.52 | |
| | 49 | 0.68 | |
| | 50 | 0.46 | |
| | 51 | 0.63 | |
| Dampness-heat | 39 | 0.56 | 0.63 |
| | 41 | 0.55 | |
| | 46 | 0.44 | |
| | 48 | 0.55 | |
| | 49 | 0.68 | |
| | 56 | 0.49 | |
| | 57 | 0.60 | |
| | 59 | 0.58 | |
| | 60 | 0.57 | |
| Blood-stasis | 33 | 0.57 | 0.67 |
| | 35 | 0.48 | |
| | 36 | 0.65 | |
| | 37 | 0.46 | |
| | 40 | 0.44 | |
| | 43 | 0.66 | |
| | 44 | 0.50 | |
| | 45 | 0.51 | |
| Qi-depression | 9 | 0.49 | 0.76 |
| | 10 | 0.50 | |
| | 11 | 0.52 | |
| | 12 | 0.56 | |
| | 13 | 0.57 | |
| | 15 | 0.40 | |
| | 47 | 0.52 | |
| Inherited -special | 24 | 0.58 | 0.89 |
| | 25 | 0.56 | |
| | 26 | 0.50 | |
| | 30 | 0.61 | |
| | 31 | 0.60 | |
| | 32 | 0.52 | |
| | 34 | 0.50 | |

**Table 6.** Cronbach's alpha coefficients for nine sub-scales

| Sub-scales | Number of Question | Cronbach's alpha |
|---|---|---|
| Neutral | 1,2,7,8,22,23,53,54 | 0.73 |
| Qi-deficiency | 2,3,4,5,6,7,27 | 0.70 |
| Yang-deficiency | 18,19,20,22,23,52, 55,58 | 0.76 |
| Yin-deficiency | 18,19,20,22, 23, 52,55,58,38,44,46 | 0.76 |
| Phlegm-dampness | 14,16,28,42,47,49,50,51 | 0.78 |
| Dampness-heat | 39,41,46,48,49,56,57,59,60 | 0.78 |
| Blood-stasis | 33,35,36,37,40,43,44,45 | 0.71 |
| Qi-depression | 9,10,11,12,13,15,47 | 0.83 |
| Inherited-special | 24,25,26,30,31,32,34 | 0.77 |

**Table 7.** Criterion validity of the Vietnamese version of CCMQ with SF-36 components

| Sub-scales | Correlations with PCS | Correlations with MCS | Correlations with SF-36 |
|---|---|---|---|
| Neutral | 0.61 | 0.70 | 0.67 |
| Qi-deficiency | -0.52 | -0.60 | -0.57 |
| Yang-deficiency | -0.41 | -0.47 | -0.46 |
| Yin-deficiency | -0.38 | - 0.44 | -0.43 |
| Phlegm-dampness | -0.44 | -0.51 | -0.50 |
| Dampness-heat | -0.27 | -0.33 | -0.31 |
| Blood-stasis | -0.40 | -0.47 | -0.47 |
| Qi-depression | -0.49 | -0.60 | -0.54 |
| Inherited-special | -0.32 | -0.39 | -0.36 |

## 4. DISCUSSION

The cross-cultural adaptation research is conducted to assess the appropriateness of questions or measures when applied in another culture different from where the original scale was developed, to prove the existence of the structure or concept of interest in different cultures and the possibility of measuring them with the same stable scale [30]. In the case of our study, many correspondence studies around the world have demonstrated the presence of the body constitution concept as well as the reliability and validity of the CCMQ scale globally [5, 6, 7, 31, 32]. Therefore, this study has a firm basis to translate and evaluate the characteristics of the CCMQ scale, with the expectation that the Vietnamese version of the CCMQ scale has the same reliability and validity as other studies in the world. Our study followed the translation process recommended by Guillemin et al, consisting of five steps in order: forward translation, reverse translation, summation, expert review, and pilot trial [8]. Most translation processes refer to the necessity of an appraisal process agreed by experts [9, 15]. Zhu's study in Japan involved 7 experts [5], while Wong's study in Hong Kong included 10 experts (Traditional Medicine practitioners), who were academically qualified with a bachelor's degree in Traditional Medicine and more than 5 years of clinical experience (average 7.2 – 8.4 years) [6]. In our study, the experts invited to evaluate CCMQ scale included Traditional Medicine doctors with a master's degree or higher level and an average of 9 ± 1.4 years of experience. To assess content validity, our study used I-CVI as recommended by Lynn, similar to other studies, such as that of Wong and Zhu [5, 6]. The results showed that 3 sentences had CVI <80%, the sentence with the lowest CVI was 57%, while in Wong's study, there were 6 sentences with CVI <80%, the sentence with the lowest CVI was 50%. Calculation of the surface value was determined by the evaluation of 30 subjects in the pilot study phase with methods and implementation similar to the study of Chin et al in Malaysia [33]. Yanbo Zhu et al. assessed face validity base on ideas from 7 Japanese subjects during pilot survey while our survey was conducted on 30 subjects. Moreover, the result of this Japanese study was more subjective than ours as it did not assess content validity (CVI) [5]. Our research had a special feature compared to other studies; in the current one, after the pilot phase, we invited a board of 10 qualified experts who are Associate Professors, Doctors of Medicine, and Second Degree Specialists nationwide to release the final version. This helps the Vietnamese version of CCMQ to be nationwide characteristic and have higher professional value, higher applicability.

Phase 2 of the study was conducted in Ho Chi Minh City with a total of 455 participants included 198 males (43.5%) and 257 females (56.5%), this is correspondence to the study of Zhu et al, which had the proportion of male was 39.8% and that of female was 60.2% [5]. Besides, the average age of the participants in our study was 30 years (30.4 ± 13.1), younger than that of the respondents in Yanbo Zhu's report (43.9 ± 12.1) [6], in Wong's one (48.9 ± 14.8) [5]. Our participants were volunteers recruited from the local community in Ho Chi Minh City while these two studies in Japan and Hong Kong both conducted on hospitalized patients whose ages were likely to be older; therefore, the median age of our study was younger than that of the above researches. The validity of the CCMQ scale in this study is shown by criterion validity, content validity, face validity; reliability in the research included test-retest reliability and internal consistency. The test-retest reliability is shown in Table 5 (test-retest reliability of the 9 BC types scale and 60 questions), evaluated the Spearman correlation coefficient for the 9 BC types scale and the weighted kappa coefficient for each of 60 questions between the first and the second session. In this study, all data on the weighted kappa coefficient were greater than 0.4, and the Spearman correlation coefficient was greater than 0.6. Both results showed good test-retest reliability for both 60 questions and 9 BC types scale. The internal consistency of the CCMQ scale is shown in Table 6. Cronbach's alpha coefficient of each BC type from 0.7 to 0.83 was above the threshold of 0.70, showing good internal

consistency. Compared with the study of Zhu, the Cronbach's alpha coefficient for each BC type was 0.67 – 0.79, that for the scale of 5 BC types included Yang-deficiency, Yin-deficiency, Dampness-heat, Blood-stasis, and Inherited-special were above 0.7; the Neutral, Qi-deficiency, Phlegm-dampness and Qi-depression were 0.65, 0.65, 0.66, 0.69, respectively [5]. This result showed that the Vietnamese version of CCMQ had higher internal consistency than the Japanese version. Calculating the criterion validity of the Vietnamese version of CCMQ scale was determined by the correlation between the score of the Vietnamese version of CCMQ scale with that of the SF-36 quality of life scale (Table 7). The results showed that the Neutral type was positively correlated while unbalanced types were negatively correlated with SF-36 scale. In particular, the Qi-deficiency patterns had shown the most significant negative correlation to SF-36 scale (-0.57). This result is similar to the study of Zhu [5]. In Zhu's research, the correlation coefficient between 9 types of BC of the Japanese CCMQ scale and SF-36 scale is 0.46 for the Neutral type (positive correlation) and from -0.35 to -0.50 (negative correlation) for the 8 unbalanced types, especially the Qi-deficiency pattern (-0.50) [5]. The research which was conducted in Ho Chi Minh City in 2021 on physical and mental health conditions of young college students with different Traditional Chinese Medicine constitutions reported a connection between Traditional Chinese Medicine constitutes and quality of life (SF-36) among college students. In particular, people with the Neutral type had a higher quality of life than those with unbalanced patterns [34]. This finding was consistent with theory of Traditional Medicine which suggested that people with the Neutral constitution considered as the healthiest should have the highest SF-36 score. In contrast, ones with unbalanced constitutions considered as the pathological constitutions would have lower scores in the SF-36 physical and mental health summary scales. From a Traditional Medicine point of view on health and disease, a balanced body constitution represents a favorable general health status while unbalanced constitutions could make people more susceptible to certain diseases. The Qi-deficiency pattern, for example, is often seen in individuals with stress work, unhealthy eating diet, less physical activity, as well as a sedentary lifestyle in Ho Chi Minh city, which seems to make them vulnerable to getting respiratory diseases [35]. The results were good evidence on not only the concurrent validity of the CCMQ but also the importance of imbalanced BC types and the concept of "Not Yet Ill" "Not Yet Ill" simply means that an unbalanced constitution needs to be cured before becoming a particular disease. Differences in body constitution plays important roles in determining the risk of contracting diseases, in clinical prognosis and in the selection of treatment best suited for an individual. Therefore, identifying whether a patient has a balanced or imbalanced state contributes to the personalized approach to traditional medicine in terms of diagnosis, prognosis and therapeutic strategies [35]. In summary, the research results showed that the Vietnamese version of CCMQ is a reliable and valid instrument to assess body constitution of the general population as same as other versions of the CCMQ scale in the world such as Japan [5], Hong Kong [6], and Korea [7].

However, there are some limitations in this study. Firstly, the sample size of this study was relatively small and the research sample was not recruited via a rigorous random sampling method, which means that the results are not sufficiently representative of the population in Ho Chi Minh City. Secondly, this study was based solely on cross-sectional data. Longitudinal studies should be conducted to confirm the findings. Thirdly, the language experts in step 2 should be foreigners rather than Vietnamese who used to live abroad as in our study.

## Conclusion

The Vietnamese version of CCMQ was built and accomplished after two periods. The validity (content validity, face validity, criterion validity) and reliability (test-retest reliability, internal consistency) of the Vietnamese CCMQ scales were satisfactory. The CCMQ was able to classify the majority of people into one or more BC types. The CCMQ has the potential applications in population-based epidemiological studies as well as clinical trials. Further research should also be done to explore whether the CCMQ can be shortened to improve its acceptability. Calibration of the cut-off scores for the definition of specific BC types should be carried out based on gold standards to attain better accuracy. The performance as an outcome measure in health promotion interventions should be evaluated.

## CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

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## SUPPLEMENTARY MATERIAL

Supportive/Supplementary material intended for publication must be numbered and referred to in the manuscript but should not be a part of the submitted paper. List all Supportive/Supplementary Material and include a brief caption line for each file describing its contents.

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**SUPPLEMENTARY MATERIAL**

**The "pre-final 1" and the final Vietnamese version of CCMQ**

Please read each question thoroughly and choose an answer that you find most suitable based on your recent condition or the feelings you have been through in this year. If you are not firmly sure of giving a proper answer, choose the one that is approximately equivalent to your recently practical condition. Please be affirmed that all the questions are based on your medical state in this year and you can only choose one appropriate answer.

(Vui lòng đọc từng câu hỏi và chọn đáp án phù hợp nhất với bạn dựa trên tình trạng hiện tại hoặc cảm giác mà bạn đã trải qua trong một năm qua. Nếu bạn không chắc chắn về câu trả lời, hãy chọn câu trả lời gần nhất với tình trạng thực tế của bạn. Xin lưu ý rằng tất cả các câu hỏi đều dựa trên tình hình của bạn trong 1 năm qua và mỗi câu hỏi bạn chỉ chọn một đáp án phù hợp nhất.)

| | |
|---|---|
| 1. No (not at all) | 1. Không (hoàn toàn không) |
| 2. Rarely (little) | 2. Hiếm khi (có chút ít) |
| 3. Sometimes (some) | 3. Thỉnh thoảng (một số lần) |
| 4. Often (relatively) | 4. Thường (khá nhiều) |
| 5. Always (very) | 5. Luôn luôn (rất nhiều) |

| **"Pre-final 1" Vietnamese version of CCMQ** | **Final Vietnamese version of CCMQ** |
|---|---|
| (1) Were you energetic? | (1) Were you feeling well? |
| (*Bạn có cảm thấy sức khỏe dồi dào không?)* | *(Bạn cảm thấy sức khỏe có tốt không?)* |
| (2) Did you get tired easily? | (2) Did you get tired easily? |
| *(Bạn có dễ bị mệt mỏi không?)* | *(Bạn có dễ bị mệt mỏi không?)* |
| (3) Did you suffer from shortness of breath (fast breathing, difficulty breathing)? | (3) Did you get out of breath (or experience rapid breath or be unable to take deep breath)? |
| *Bạn có dễ bị hụt hơi (thở gấp, khó thở được) không?* | *(Bạn có hay bị hụt hơi (hoặc thở nhanh, khó hít thở sâu) không?)* |
| (4) Did you get palpitations easily? | (4) Did you get palpitations easily? |
| *(Bạn có dễ hồi hộp đánh trống ngực không?)* | *(Bạn có hay hồi hộp, đánh trống ngực không?)* |
| (5) Did you get dizzy easily or become giddy when standing up? | (5) Did you get dizzy easily or become giddy when standing up? |
| *(Bạn có hay bị hoa mắt hoặc chóng mặt khi đứng lên không?)* | *(Bạn có hay bị hoa mắt hoặc chóng mặt khi đứng lên không?)* |
| (6) Did you prefer quietness and did not feel like talking? (nghĩa là ko buồn nói) | (6) Did you prefer quietness and did not like to talk? |
| *(Bạn có thích yên tĩnh và rất lười nói không?)* | *(Bạn có thích yên tĩnh và không thích nói không?)* |
| (7) Did you feel weak when talking? | (7) Did you feel weak when talking? |
| *(Bạn có nói giọng nhỏ, yếu và không có sức không?)* | *(Bạn có nói giọng nhỏ, yếu và không có sức không?)* |
| (8) Did you forget things easily? | (8) Did you forget things easily? |
| *(Bạn có hay quên không?)* | *(Bạn có hay quên không?)* |
| (9) Did you feel gloomy and depressed? | (9) Did you feel gloomy and depressed? |
| *(Bạn có cảm thấy chán nản và phiền muộn không?)* | *(Bạn có cảm thấy chán nản và phiền muộn không?)* |
| (10) Did you get anxious and worried easily? | (10) Did you get anxious and worried easily? |
| *(Bạn có dễ bị căng thẳng và bất an không?)* | *(Bạn có dễ bị căng thẳng và bất an không?)* |
| (11) Did you feel sensitive, vulnerable or emotionally upset? | (11) Did you feel sensitive, vulnerable or emotionally upset? |

| | |
|---|---|
| *(Bạn là người nhạy cảm và dễ bị tổn thương?)* | *(Bạn là người nhạy cảm và dễ bị tổn thương?)* |
| (12) Were you easily scared or frightened? | (12) Were you easily scared or frightened? |
| *(Bạn có thường bị sợ hãi hoặc hoảng sợ không?)* | *(Bạn có hay bị sợ hãi hoặc hoảng sợ không?)* |
| (13) Did you suffer from pain in ribs or tension breasts? | (13) Did you suffer from pain or tension in ribs or breasts? |
| *(Bạn có bị đau ở sườn hoặc căng tức vú không?)* | *(Vùng ngực sườn hoặc vú của bạn có bị đau hay căng tức không?)* |
| (14) Did you feel chest or stomach stuffiness? | (14) Did you feel chest or stomach stuffiness? |
| *(Bạn có cảm thấy tức ngực hoặc đầy bụng không?)* | *(Bạn có cảm thấy tức ngực hoặc đầy chướng bụng không?)* |
| (15) Did you sigh for no reason? | (15) Did you sigh for no reason? |
| *(Bạn có thường thở dài không?)* | *(Bạn có thường thở dài không?)* |
| (16) Did your body feel heavy or become irritable? | (16) Did your body feel heavy or become irritable? |
| *(Bạn có cảm thấy cơ thể nặng nề hoặc khó chịu không?)* | *(Bạn có cảm thấy cơ thể nặng nề hoặc khó chịu không?)* |
| (17) Did the palms of your hands or soles of your feet feel hot? | (17) Did the palms of your hands or soles of your feet feel hot? |
| *(Bạn có cảm thấy lòng bàn tay và lòng bàn chân của mình nóng không?)* | *(Bạn có cảm thấy nóng lòng bàn tay và lòng bàn chân không?)* |
| (18) Did your hands or feet feel cold or clammy? | (18) Did your hands or feet feel cold or clammy? |
| *(Tay chân của bạn có lạnh không?)* | *(Bạn có lạnh bàn tay, bàn chân không?)* |
| (19) Did you feel cold easily in your abdomen, back, lower back or knees? | (19) Did you feel cold easily in your abdomen, back, lower back or knees? |
| *(Bụng, lưng, thắt lưng hoặc đầu gối của bạn có lạnh không?)* | *(Bụng, lưng, thắt lưng hoặc đầu gối của bạn có cảm giác lạnh không?)* |
| (20) Were you sensitive to cold and tend to wear more clothes than others? | (20) Were you sensitive to cold and tend to wear more clothes than others? |
| *(Bạn có cảm thấy sợ lạnh và phải mặc nhiều lớp quần áo hơn những người khác không?)* | *(Bạn có thấy sợ lạnh và phải mặc nhiều quần áo hơn những người khác không?)* |
| (21) Did you get hot flashes? | (21) Did you get hot flashes? |
| *(Bạn có cảm thấy cơ thể, mặt nóng không?)* | *(Bạn có cảm giác nóng vùng mặt và cơ thể không?)* |
| (22) Did you feel more vulnerable to the cold than others (winter coldness, air conditioners, fans, etc.)? | (22) Did you feel more vulnerable to the cold than others (winter coldness, air conditioners, fans, etc.)? |
| *(Bạn không thể chịu được cái lạnh (lạnh vào mùa đông hoặc lạnh do dùng điều hòa, quạt điện vào mùa hè…) như người bình thường không?)* | *(Bạn chịu lạnh kém hơn người bình thường không? (lạnh vào mùa đông hoặc lạnh do dùng điều hòa, quạt điện vào mùa hè…))* |
| (23) Did you catch colds more easily than others? | (23) Did you catch colds more easily than others? |
| *(Bạn có dễ bị cảm lạnh hơn những người khác không?)* | *(Bạn có dễ bị cảm hơn những người khác không?)* |
| (24) Did you sneeze even when you did not have a cold? | (24) Did you sneeze even when you did not have a cold? |
| *(Bạn có bị hắt hơi ngay cả khi không bị cảm lạnh không?)* | *(Bạn có bị hắt hơi ngay cả khi không bị cảm lạnh không?)* |
| (25) Did you have runny or stuffy nose even when you did not have a cold? | (25) Did you have runny or stuffy nose even when you did not have a cold? |
| *(Bạn có bị nghẹt và sổ mũi khi không bị cảm lạnh không?* | *(Bạn có bị nghẹt và sổ mũi khi không bị cảm lạnh không?)* |
| (26) Did you have a cough or asthma caused by seasonal changes, changes in temperature, or an unusual smell? | (26) Did you cough or wheeze due to seasonal change, temperature change, or unpleasant odor? |
| *(Bạn có bị ho hay suyễn do chuyển mùa, thay đổi nhiệt độ hoặc có mùi khác thường không?)* | *(Bạn có bị ho hay khò khè khi thời tiết chuyển mùa, nhiệt độ thay đổi hoặc do mùi khác thường không?)* |

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| (27) Did you sweat easily when you had a slightly increased physical activity? | (27) Did you sweat easily when you had a slightly increased physical activity? |
| *(Bạn có dễ bị đổ mồ hôi khi hoạt động nhiều không?)* | *(Bạn có dễ bị đổ mồ hôi khi hoạt động nhiều không?)* |
| (28) Did you have an excessively oily sweat on forehead? | (28) Did you have an excessively oily sweat on forehead? |
| *(Bạn có tiết quá nhiều mồ hôi dầu trên trán không?)* | *(Bạn có tiết quá nhiều mồ hôi dầu trên trán không?)* |
| (29) Did you feel your skin or lips dry? | (29) Did you feel your skin or lips dry? |
| *(Da hoặc môi của bạn có bị khô không?)* | *(Da hoặc môi của bạn có bị khô không?)* |
| (30) Did you get allergies easily? (E.g. Medicine, food, odors, pollen, pet dander, or during seasonal change or weather change etc.)? | (30) Did you get allergies easily? (E.g. Medicine, food, odors, pollen, pet dander, or during seasonal change or weather change etc.)? |
| *(Bạn có dễ bị dị ứng (với thuốc, thức ăn, mùi, phấn hoa, hoặc khi chuyển mùa hoặc khí hậu thay đổi) không?)* | *(Bạn có dễ bị dị ứng (với thuốc, thức ăn, mùi, phấn hoa, hoặc khi giao mùa, thời tiết thay đổi) không?)* |
| (31) Did your skin get hives/urticaria easily? | (31) Did your skin get hives/urticaria easily? |
| *(Da của bạn có dễ bị nổi mề đay (nổi thành mảng tròn, nổi thành khối, nổi thành cục) không?)* | *(Da của bạn có dễ bị nổi mề đay (nổi thành mảng tròn, nổi thành khối, nổi thành cục) không?)* |
| (32) Did your skin have purpura (purple spots, ecchymosis) due to allergies? | (32) Did your skin have purpura (purple spots, ecchymosis) due to allergies? |
| *(Bạn đã bao giờ bị ban xuất huyết (chấm xuất huyết tím, bầm máu) trên da do dị ứng chưa?)* | *(Da của bạn đã bao giờ xuất hiện ban xuất huyết (chấm xuất huyết tím, bầm máu dưới da) do dị ứng chưa?)* |
| (33) Did black or purple bruises suddenly appear on your skin for no reason? | (33) Did black or purple bruises suddenly appear on your skin for no reason? |
| *(Bạn có thấy trên da tự nhiên xuất hiện vết bầm đen hoặc xanh đen (xuất huyết dưới da) không?)* | *(Bạn có thấy trên da tự nhiên xuất hiện vết bầm đen hoặc xanh đen (xuất huyết dưới da) không?)* |
| (34) Did your skin turn red and show traces when you scratched it? | (34) Did your skin turn red and show traces when you scratched it? |
| *(Da bạn có ửng đỏ khi gãi hoặc bị trầy xước?)* | *(Da bạn có dễ bị ửng đỏ hoặc trầy xước khi gãi không?)* |
| (35) Were your lips redder than others? | (35) Were your lips redder than others? |
| *(Màu môi của bạn có đỏ hơn người khác không?)* | *(Màu môi của bạn có đỏ hơn người khác không?)* |
| (36) Did you have visible capillary capillaries/thread veins on your cheeks? | (36) Did you have visible capillary capillaries/thread veins on your cheeks? |
| *(Bạn có những mạch máu nhỏ màu đỏ trên má không?)* | *(Bạn có những mạch máu nhỏ màu đỏ trên má không?)* |
| (37) Did you have pain in any part of your body? | (37) Did you have pain in any part of your body? |
| *(Bạn có đau ở vị trí nào trên cơ thể không?* | *(Bạn có đau ở vị trí nào trên cơ thể không?)* |
| (38) Did you have red cheeks or experience hot flashes? | (38) Did you have red cheeks or experience hot flashes? |
| *(Bạn có thấy hai gò má đỏ hoặc nóng từng cơn không?)* | *(Bạn có thấy hai gò má đỏ hoặc nóng từng cơn không?)* |
| (39) Did your face or nose feel greasy, oily or shiny? | (39) Did your face or nose feel greasy, oily or shiny? |
| *(Bạn có cảm thấy nhờn hoặc bóng trên mặt hoặc mũi của bạn không?)* | *(Bạn có cảm thấy nhờn hoặc bóng trên mặt hoặc mũi của bạn không?)* |
| (40) Did you have a dark face or get brown spots easily? | (40) Did you have a dark face or get brown spots easily? |
| *(Bạn có thấy sắc mặt của mình tối hoặc dễ bị đốm nâu không?)* | *(Bạn có thấy sắc mặt của mình tối hoặc dễ xuất hiện đốm nâu không?)* |
| (41) Did you get acne or sores easily? | (41) Did you get acne or sores easily? |
| *(Bạn có dễ bị mụn hoặc nhọt không?)* | *(Bạn có dễ bị mụn hoặc nhọt không?)* |
| (42) Did you have upper eyelid swelling? | (42) Did you have upper eyelid swelling? |

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| *(Mí mắt của bạn có bị sưng (mí mắt nhìn hơi sưng) không?)* | *(Mí mắt trên của bạn có bị sưng không?)* |
| (43) Did you get dark circles under the eyes easily? | (43) Did you get dark circles under the eyes easily? |
| *(Bạn có dễ bị quầng thâm ở mắt không?)* | *(Bạn có dễ bị quầng thâm ở mắt không?)* |
| (44) Did your eyes feel dry? | (44) Did your eyes feel dry? |
| *(Bạn có cảm thấy khô mắt không?)* | *(Bạn có cảm thấy khô mắt không?)* |
| (45) Did your lips get darker, more blue or purpie purple than usual? | (45) Did your lips get darker, more blue or purpie purple than usual? |
| *(Môi của bạn có bị thâm (xỉn màu) không?)* | *(Môi của bạn có bị thâm (xỉn màu) không?)* |
| (46) Did your throat or mouth feel dry and need to drink water immediately? | (46) Did your throat or mouth feel dry and need to drink water immediately? |
| *Bạn có cảm thấy khô miệng, khô họng và luôn muốn uống nước không?* | *Bạn có cảm thấy khô miệng, khô họng và luôn muốn uống nước không?* |
| (47) Did your throat feel strange (i.e, like something was stuck or there was a lump in your throat), and you were unable to barf or swallow things? | (47) Did your throat feel strange (i.e, like something was stuck or there was a lump in your throat)? |
| *(Bạn có cảm giác có dị vật trong cổ họng, và bạn không thể nôn hoặc nuốt không?)* | *(Bạn có cảm giác có dị vật trong cổ họng, và bạn không thể nôn hoặc nuốt không?)* |
| (48) Did you have bitterness or a strange taste in your mouth? | (48) Did you have bitterness or a strange taste in your mouth? |
| *(Bạn có cảm thấy đắng miệng hoặc có vị lạ trong miệng không?)* | *(Bạn có cảm thấy đắng miệng hoặc có vị lạ trong miệng không?)* |
| (49) Did you have a sticky feeling in mouth? | (49) Did you have a sticky feeling in mouth? |
| *(Bạn có cảm thấy dính nhớt trong miệng không?)* | *(Bạn có cảm thấy trong miệng bị dính nhớt không?)* |
| (50) Was your tongue coating sticky or slightly thick? | (50) Did the surface on your tongue have white or yellowish sticky coating or get thicker? |
| *(Rêu lưỡi của bạn có dày nhớt hoặc hơi dày không?).* | *(Bạn có thường thấy bề mặt lưỡi của mình đóng bợn trắng hoặc vàng nhớt hoặc dày lên không?)* |
| (51) Did you have lots of phlegm, especially in your throat? | (51) Did you have lots of phlegm, especially in your throat? |
| *(Bạn có thường bị khạc nhiều đờm không?)* | *(Bạn có thường bị khạc nhiều đờm không?)* |
| (52) Did you feel uncomfortable when you ate or drank something cold or was you afraid of drinking or eating something cold? | (52) Did you feel uncomfortable when you ate or drank something cold or was you afraid of drinking or eating something cold? |
| *(Bạn có cảm thấy khó chịu khi ăn (uống) đồ lạnh hoặc sợ ăn (uống) đồ lạnh không?)* | *(Bạn có cảm thấy khó chịu khi ăn (uống) đồ lạnh hoặc sợ ăn (uống) đồ lạnh không?)* |
| (53) Could you adapt yourself to external natural or social environment change? | (53) Could you adapt yourself to external natural or social environment change? |
| *(Bạn có thể thích ứng với những thay đổi của môi trường tự nhiên và xã hội bên ngoài không?)* | *(Bạn có dễ thích nghi với những thay đổi của môi trường tự nhiên và xã hội không?)* |
| (54) Did you suffer from insomnia? | (54) Did you suffer from insomnia? |
| *(Bạn có dễ bị mất ngủ không?)* | *(Bạn có dễ bị mất ngủ không?)* |
| (55) Did you easily contract diarrhea when you were exposed to cold or eat (or drink) something cold? | (55) Did you easily contract diarrhea when you were exposed to cold or eat (or drink) something cold? |
| *(Bạn có dễ bị tiêu chảy (đau bụng) sau khi bị cảm lạnh hoặc ăn (uống) đồ lạnh không?)* | *(Bạn có dễ bị tiêu chảy (đau bụng) sau khi bị cảm lạnh hoặc ăn (uống) đồ lạnh không?)* |
| (56) Did you pass sticky stools and /or feel that your bowel movement is incomplete? | (56) Did you pass mucous stools and /or feel that your bowel movement is incomplete? |

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| *(Bạn có cảm thấy phân của mình dính và đi tiêu có cảm giác không hết phân không?)* | *(Bạn có cảm thấy phân của mình nhầy và đi tiêu không hết phân không?* |
| (57) Did you get constipated easily or have dry stools? | (57) Did you get constipated easily or have dry stools? |
| *(Bạn có dễ bị táo bón hoặc phân khô không?)* | *(Bạn có dễ bị táo bón hoặc phân khô không?)* |
| (58) Was your stomach/belly flabby? | (58) Was your stomach/belly flabby? |
| *(Bụng của bạn có to ra không?)* | *(Bụng của bạn có to ra không?)* |
| (59) Did your urethral canal feel hot when you urinated, or did your urine have a dark color? | (59) Did your urethral canal feel hot when you urinated, or did your urine have a dark yellow color? |
| *(Bạn có bị nóng đường tiểu hoặc nước tiểu sẫm màu khi đi tiểu không?)* | *(Khi đi tiểu bạn có cảm giác bị nóng đường tiểu hoặc thấy nước tiểu vàng sậm không?)* |
| (60) Was your scrotum always wet (only for male interviewees)? | (60) Was your scrotum always wet (only for male interviewees)? |
| *(Bộ phận sinh dục (bìu) của bạn có ẩm ướt không? (Dành cho nam giới))* | *(Bộ phận sinh dục (bìu, dương vật) của bạn có ẩm ướt không? (Dành cho nam giới trả lời))* |
| (60) Was your vaginal discharge yellowish (for female interviewees)? | (60) Was your vaginal discharge yellowish (for female interviewees)? |
| *(Dịch tiết âm đạo của bạn có bị vàng không? (Dành cho nữ giới))* | *(Dịch tiết âm đạo của bạn có bị vàng không? (Dành cho nữ giới trả lời))* |