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Original Research

Translating and validating the gay affirmative practice scale for nurses in mainland China

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Abstract

Background: The gay affirmative practice (GAP) scale is an effective tool for evaluating the beliefs and behaviors of health care professionals toward gay and lesbian clients.
Aim: This study aimed to examine the reliability and validity of the GAP scale among Chinese nurses.
Methods: A quantitative cross-sectional study was conducted to evaluate the Chinese version of the GAP (C-GAP) scale after translation and cross-cultural adaptation and to examine its psychometric characteristics. The reliability and validity of the C-GAP scale were determined by item analysis, factor analysis, internal consistency, test-retest reliability, and discriminant construct validity.
Outcomes: The GAP scale was translated and adapted specifically for China. A total of 1440 participants completed the C-GAP scale, sociodemographic questionnaire, and Marlowe-Crowne social desirability scale.
Results: The C-GAP scale exhibited a Cronbach α of 0.95, with a high test-retest reliability coefficient of 0.92. Exploratory factor analysis identified 2 factors that accounted for 59.91% of the total variance. The results of the confirmatory factor analysis were as follows: $\chi^2/df = 1.09$, goodness-of-fit index = 0.98, adjusted goodness-of-fit index = 0.97, root mean square error of approximation = 0.01, Tucker-Lewis index = 1.00, comparative fit index = 1.00, incremental fit index = 1.00, parsimony goodness-of-fit index = 0.85, and parsimony normed fit index = 0.91. These findings confirm that all goodness-of-fit indices were satisfactory.
Clinical Implications: The C-GAP scale can be an effective tool for health care professionals and managers and for education and research; it can also identify the beliefs and behaviors of health care professionals toward gay and lesbian clients, facilitating cultural competence development and enhancing care quality awareness and skills.
Strengths and Limitations: The C-GAP scale demonstrates reliability and validity; however, because the sample consisted only of nurses, the findings may not be generalizable to other professional groups, such as counselors and therapists. Therefore, the occupational focus of the sample limited the broader applicability of the results.
Conclusion: The C-GAP scale is a reliable and valid tool suitable for assessing the practice attitudes and behaviors of Chinese nurses toward gay and lesbian clients.

Keywords: gay affirmative practice; China; nurse; psychometric testing.

Introduction

China has an estimated population of gender and sexual minorities exceeding 70 million, making it the country with the largest gay community in the world.[1] These individuals tend to have worse physical and mental health than their heterosexual counterparts.[2] The mental and physical health outcomes of gay and lesbian individuals are comparatively poorer, indicating substantial health inequities. For instance, suicidal ideation,[3] emotional disorders,[4] anxiety and depression,[5] eating disorders,[6] substance abuse,[7] and smoking[8] are common. Physically, gay men demonstrate a higher susceptibility to HIV/AIDS,[8] increased human papillomavirus infection rates,[9] and a greater incidence of associated anal cancers.[9] Lesbians are more likely to be obese than heterosexual women.[10]

These health differences result from inherent health risks, a lack of culturally sensitive care, and societal biases against homosexuality, which worsen the issue.[11,12] Moreover, China's health care system has yet to adequately recognize and address the specific health needs of the homosexual population,[1] further widening the existing health inequities.

To close the gap between gays and lesbians in medical care, it is essential to improve the quality of medical services for these groups, advocate patient-centered care, and support health equity for homosexuals. Implementing a practice model that promotes equal rights for gays and lesbians is necessary.[13] This gay affirmative practice (GAP) model has been expanded and applied within the health care domain. It provides guiding principles for therapy and offers a framework for health care professionals to ensure that patients from sexual and

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gender minorities receive respectful, nondiscriminatory, and culturally sensitive care.[14,15] The GAP model is particularly beneficial in China, where social attitudes toward sex are rapidly evolving. The health care field must adapt to these changing attitudes by focusing on providing culturally competent care and respecting the diversity of patients' identities and experiences.[16] This is especially important for sexual and gender minorities. However, many health care settings lack targeted interventions and tools to ensure that gay and lesbian patients receive positive and sensitive care.

The GAP scale has been developed and validated in the United States to evaluate social work practitioners' engagement with GAP.[17,18] This tool measures the incorporation of GAP principles and can help bridge the divide between the attitudes and behaviors of the health care providers in their practice with gay and lesbian clients.[19,20] However, China currently lacks an effective tool to measure nurses' attitudes toward GAP, and the effectiveness of the GAP scale remains untested. Additionally, existing scales fail to adequately reflect the nuances of nursing practice, underscoring the need for a tailored evaluation instrument.[21] This study aimed to adapt the GAP scale to Chinese and test its validity for Chinese nurses, offering a customized evaluation method for health care professionals' practices.

Methods

Participants

Participants were recruited by convenience sampling, and data were collected from May to September 2021. Invitations for nurses to voluntarily participate in this study were distributed through www.wjx.cn, a platform similar to Amazon Mechanical Turk. The inclusion criteria for the initial sample were as follows: (1) registered nurses from one of the participating hospitals and (2) provision of informed consent for voluntary participation.

The sample size was calculated per the recommended ratio of 10 participants per observable variable. Since the scale comprised 30 items, a minimum sample size of 300 nurses was required.[22] A total of 1440 nurses from 7 hospitals in Dalian province, China, were recruited for this study. Subsequently, 240 invalid questionnaires were excluded, leaving a final sample of 1200 participants for analysis. Additionally, 35 questionnaires were collected by convenience sampling methods and completed with paper-and-pencil tests for test-retest reliability.

When a normal distribution was observed, categorical variables were expressed as frequency and percentage, whereas continuous variables were expressed as mean and SD.

All samples were used for item analysis, exploratory factor analysis, and confirmatory factor analysis to test the structural validity of the Chinese version of the GAP (C-GAP) scale,[23] and the factor structure of the C-GAP scale was clarified by the variance rotation method. By examining the correlation between the C-GAP and Marlowe-Crowne social congruence (MCSD) scale, the discriminant validity was evaluated,[15] and the nonsignificant correlation was considered the preliminary evidence for discriminant structural validity.

SPSS Statistics version 22 and SPSS Amos version 23 (IBM) were used for data analysis.

Instrument

The questionnaire included demographic information about the nurses, such as age, education level, position title, length of service, biological sex, sexual orientation, religion, and experience with gay and lesbian individuals. Age and length of service were treated as continuous variables, whereas other demographic variables were treated as categorical variables.

GAP scale

The original GAP scale was designed to evaluate practitioners' beliefs and behaviors in adhering to GAP principles. The scale comprised 30 items divided into two 15-item domains: beliefs and practices.[15] Responses to each item were recorded on Likert scales ranging from "strongly agree" to "strongly disagree" and from "always" to "never." The total GAP scale score ranges from 30 to 150, with higher scores indicating more affirmative practices with gay and lesbian clients. The overall Cronbach α for the original scale was 0.95, while those for the beliefs and behaviors domains were 0.93 and 0.94, respectively.

Marlowe-Crowne social desirability scale

The MCSD scale was developed to assess the extent to which research participants presented themselves in ways that aligned with social expectations. It examines whether people modify their responses to meet or avoid meeting social expectations.[24] The scale was based on the lie detection scale from the Minnesota Multiphasic Personality Inventory. The original MCSD had 33 items, but the Chinese version was reduced to 13 items and utilized a forced-choice response format.[25] Responses of "no" and "yes" were scored 0 and 1, respectively. The theoretical score ranges from 0 to 13, with a lower score indicating a lower tendency to conform to social expectations. The Cronbach α coefficient for the MCSD was 0.71, and the correlation coefficient for the 4-week retest was 0.74, indicating the scale's reliability and validity. In this study, the Chinese MCSD scale was used to assess the structural validity of the C-GAP scale, consistent with the development of the original GAP scale.[15] We hypothesized that the MCSD scale would have a nonsignificant correlation with the C-GAP scale, suggesting its structural validity.

Translation and adaptation procedures

We communicated with the primary author, Catherine Crisp, to obtain authorization to translate the scale into Chinese. The process involved translating and cross-culturally modifying the GAP scale and assessing its psychometric properties. This constituted the main stage of the 5-step cross-cultural adaptation process. Equivalence was ensured by the translation principles set by the American Academy of Orthopaedic Surgeons.[26]

First, the GAP scale was independently translated into Chinese by a nurse specialist and an English-language specialist. Second, the 2 experts and researchers compared the Chinese versions of the translated scale, discussed and corrected the inconsistencies, and produced the first draft of the Chinese version. Next, we invited an English-language specialist and psychologist who had not previously been exposed to the GAP scale to back-translate the first draft of the Chinese version into English. Third, the research group compared and discussed the original scale, the first draft of the Chinese translation, and the back-translated English version. Finally,

changes were made to some items based on the expert advice. The details of these modifications are as follows. Item 4, "gay/lesbian resources," was revised to "resources that are affirmatively supported, such as medical treatment, education, and social communication." Item 7, "misinformation," was revised to "inaccurate health information." Item 15, "discrimination creates problems," was revised to "health problems resulting from discrimination." Item 21, "religious oppression," was replaced with "religious discrimination." Step 5 of the process involved a pilot study with 36 nurses using the revised C-GAP scale to assess its clarity and ease of use. The pilot participants were a convenience sample from a teaching hospital affiliated with Dalian University. The C-GAP scale was finalized after incorporating any necessary modifications based on feedback from the pilot study (supplementary material 1).

Ethical considerations

Ethical approval was obtained from the Zhongshan Hospital Research Ethics Committee of Dalian University (project 2022090; approval date, April 20, 2021). Participants were considered to have consented to participate in the study upon completing the survey on www.wjx.cn. They were informed that they could withdraw from the study at any time before data analysis began.

Results

Descriptive statistics

Data were collected from 1440 nurses. After review of the submissions on www.wjx.cn, all invalid responses were manually excluded, as characterized by consistent answers across all topics or a scale-filling time <120 seconds or ≥2400 seconds. Specifically, 37 responses were eliminated due to consistent topic options, and 203 were removed per the scale-filling time criteria, resulting in a final completion rate of 83.30%. Of the remaining 1200 nurses, 1164 were women (97.00%), with a mean age of 34.19 ± 7.33 years. Most participants (68.25%) were married, nearly all (99.25%) had completed university studies, and 45.00% had 10 to 19 years of work experience (Table 1).

Table 1. Social and demographic information of the participants (N = 1200).

Descriptive characteristic	No.	%
Gender		
Male	36	3.00
Female	1164	97.00
Age, y		
21-30	411	34.25
31-40	582	48.50
41-50	159	13.25
≥51	48	4.00
Professional title		
Primary nurse	621	51.75
Nurse practitioner	477	39.75
Nurse in charge	86	7.17
Deputy director nurse	16	1.33
Education level		
Master or above	9	0.75
Undergraduate	1191	99.25
Ethnicity		
Han	1094	91.17
Minority	106	8.83
Marital status		
Unmarried	365	30.42
Married	819	68.25
Divorced/widowed	16	1.33
Sexual orientation		
Heterosexuality	1179	98.25
Nonheterosexual	11	1.75
Religious belief		
Christianity	15	1.25
Islam	2	0.17
Buddhism	60	5.00
Other	20	1.67
Without	1103	91.92
Religious piety		
Very pious	92	7.67
More pious	114	9.50
General piety	120	10.00
Without	874	72.83
Participation in religious activities		
Frequent	2	0.17
Occasionally	46	3.83
Seldom	119	9.92
Without	1033	86.08
Professional experience, y		
<5	181	15.08
5-9	274	22.83
10-19	540	45.00
≥20	205	45.00

Item analysis

A critical ratio (CR) analysis was conducted by using 27.00% of the total score as the threshold to divide the scores into high and low groups. Item discriminability was deemed higher when the CR exceeded 3.00.[27] The CR for the 30 items on the translated scale ranged from 26.03 to 31.78, indicating good discrimination. The correlation coefficients ($r = 0.62$-0.68, $P < .05$) demonstrated moderate correlations between the items and the total score. Therefore, all items were retained (Table 2).

Construct validity

The Kaiser-Meyer-Olkin value was 0.98, and the Bartlett test of sphericity was significant ($\chi^2 = 23\ 634.53$, $df = 435.00$, $P < 0.05$), indicating sampling adequacy for the exploratory factor analysis. None of the items were removed due to factor-loading values >0.40 based on principal component factor analysis.[28] Principal component analysis and oblique rotation factor analysis revealed 2 eigenvalues >1, accounting for 59.90% of the variance. The factor-item relationship demonstrated that items 1 to 15 had higher load values on factor 2, indicating that factor 2 primarily reflected nurses' beliefs in providing care for gays and lesbians. Items 16 to 30 were also aligned with these criteria, suggesting that factor 1 represented the behavioral dimension. Factor 1 had an eigenvalue of 9.17, explaining 30.55% of the variance, whereas factor 2 had an eigenvalue of 8.81, accounting for 29.36% of the variance (Table 3).

The model fitness indices demonstrated that the 2-factor model fit the data well, as indicated by the following values: $\chi^2/df = 1.09$, goodness-of-fit index = 0.98, adjusted goodness-of-fit index = 0.97, root mean square error of approximation = 0.01, Tucker-Lewis index = 1.00, comparative fit index = 1.00, incremental fit index = 1.00, parsimony goodness-of-fit index = 0.85, and parsimony normed fit

Table 2. Item analysis for the Chinese version of the GAP scale (N = 1200).

Factor: item	Item score, mean ± SD		Critical ratio	Correlation coefficient between item and total score
	Low packet (n = 328)	High packet (n = 337)		
Belief				
1	2.02 ± 0.95	4.05 ± 0.96	27.47	0.64
2	1.98 ± 0.92	4.05 ± 0.95	28.40	0.63
3	1.99 ± 0.98	4.06 ± 0.93	27.85	0.66
4	2.01 ± 0.92	3.99 ± 1.00	26.66	0.63
5	2.00 ± 0.92	4.01 ± 0.97	27.44	0.64
6	1.90 ± 0.85	4.03 ± 1.01	29.43	0.66
7	2.03 ± 0.98	4.07 ± 0.95	27.25	0.65
8	1.91 ± 0.94	4.00 ± 0.96	28.46	0.65
9	2.03 ± 0.95	3.99 ± 0.94	26.75	0.64
10	1.92 ± 0.91	4.06 ± 0.89	30.49	0.66
11	2.00 ± 0.92	4.01 ± 0.92	28.07	0.63
12	1.98 ± 0.94	3.95 ± 1.01	26.03	0.62
13	1.99 ± 0.94	4.06 ± 0.89	29.01	0.66
14	2.03 ± 0.96	4.07 ± 0.93	27.80	0.64
15	2.02 ± 0.95	4.01 ± 0.93	27.36	0.64
Behavior				
16	1.93 ± 0.84	4.01 ± 0.98	29.37	0.66
17	1.98 ± 0.88	4.04 ± 0.88	29.99	0.67
18	1.91 ± 0.87	4.01 ± 0.90	30.72	0.65
19	1.92 ± 0.92	4.07 ± 0.96	29.46	0.66
20	1.86 ± 0.89	4.05 ± 0.89	31.74	0.66
21	1.91 ± 0.91	4.09 ± 0.92	30.61	0.67
22	1.81 ± 0.82	4.05 ± 0.94	32.66	0.68
23	1.90 ± 0.96	4.07 ± 0.91	29.95	0.66
24	1.91 ± 0.90	4.07 ± 0.89	31.26	0.66
25	1.90 ± 0.90	4.12 ± 0.91	31.78	0.67
26	1.89 ± 0.92	4.04 ± 0.95	29.71	0.66
27	1.91 ± 0.89	3.98 ± 0.92	29.34	0.65
28	1.82 ± 0.89	4.04 ± 0.93	31.64	0.68
29	1.95 ± 0.92	4.01 ± 0.99	27.71	0.64
30	1.94 ± 0.98	4.06 ± 0.92	28.66	0.65

Abbreviation: GAP, gay affirmative practice.

index = 0.91 (Table 4). These selected fitting indices suggested that the model has an appropriate fit.[29,30] In the analysis of convergent validity, the average variance extracted (AVE) values are between 0.56 and 0.58, while the CR values are 0.95. For discriminant validity, the square root of the AVE was between 0.75 and 0.76, which exceeded the correlation coefficient between the corresponding factors (0.42).[31] Moreover, the correlation analysis between the GAP and MCSD scales demonstrated a nonsignificant correlation ($P = .85$).

Content validity

Eight experts were invited to assess the item- and scale-level content validity indexes of the C-CAP scale. Each expert evaluated the correlation between each item and its corresponding dimension. The expert panel consisted of a specialist in social psychology (professor, PhD, with 12 years of experience), a specialist in social medicine (associate professor with 10 years of experience), and a specialist in the sociology of gender (PhD with 5 years of experience). It also included 3 specialists in nursing: 1 head nurse (master degree with 13 years of experience), 1 nursing research specialist (PhD with 12 years of experience), and 1 specialist in nursing psychology (PhD with 6 years of experience). Additionally, a consultant for affirmative sexual and gender minority counseling (master degree with 3 years of experience) and a sexual and gender minority–friendly doctor (associate chief physician, PhD, with 20 years of experience) were part of the panel. The content validity index for the individual items ranged from 0.75 to 1.00, and the overall content validity index for the scale was 0.93.[23,32]

Reliability

The total Cronbach α for the C-GAP scale was 0.95, with the "beliefs" and "behaviors" dimensions both having α values of 0.95. As the α values were >0.70,[32] the scale demonstrated satisfactory internal consistency.

Test-retest reliability

The stability of the scale was evaluated via the test-retest method. After a 2-week interval, a random selection of participating nurses completed the scale a second time under the same conditions. The Spearman correlation coefficient between the first and second survey results was 0.92, which is >0.70.[32] This indicates that the C-GAP scale has good retest reliability.

Spearman-Brown reliability

For all samples (N = 1200), an unequal-length split coefficient was employed to assess the reliability of the 30-item C-GAP scale. The Spearman-Brown coefficient for the scale was 0.75.

Table 3. Structure and factor loadings of the translated and adapted versions of the GAP scale. (N = 1200).

	Factor	
	1	**2**
Belief		
Item 1	0.01	**0.76**
Item 2	–0.04	**0.80**
Item 3	0.00	**0.78**
Item 4	–0.03	**0.78**
Item 5	–0.02	**0.78**
Item 6	0.04	**0.76**
Item 7	0.02	**0.76**
Item 8	0.01	**0.77**
Item 9	0.01	**0.76**
Item 10	0.03	**0.75**
Item 11	–0.00	**0.76**
Item 12	–0.04	**0.79**
Item 13	0.04	**0.75**
Item 14	0.02	**0.74**
Item 15	0.00	**0.76**
Behavior		
Item 16	**0.76**	0.02
Item 17	**0.79**	0.00
Item 18	**0.80**	–0.03
Item 19	**0.80**	–0.02
Item 20	**0.79**	–0.00
Item 21	**0.79**	0.00
Item 22	**0.77**	0.03
Item 23	**0.78**	0.00
Item 24	**0.77**	0.02
Item 25	**0.78**	0.01
Item 26	**0.76**	0.03
Item 27	**0.76**	0.00
Item 28	**0.79**	0.01
Item 29	**0.81**	–0.05
Item 30	**0.77**	–0.01
Kaiser-Meyer-Olkin	0.98	
Bartlett sphericity test	23 634.53	
Characteristic root	9.17	8.81
Explained variance, %	30.55	29.36

Abbreviation: GAP, gay affirmative practice.

Table 4. Confirmatory factor analysis of the GAP scale (N = 1200).

Indicator	Criterion of judgment	Model result
RMSEA	≤0.10	0.01
GFI	≥0.90	0.98
Adjusted GFI	≥0.90	0.97
TLI	≥0.90	1.00
CFI	≥0.90	1.00
χ^2/df	<3	1.09

Abbreviations: CFI, comparative fit index; GAP, gay affirmative practice; GFI, goodness-of-fit index; RMSEA, root mean square error of approximation; TLI, Tucker-Lewis index.

Discussion

The GAP scale is a valuable tool for promoting equality and understanding in the care of gay and lesbian clients.[33] Despite positive changes in Chinese society's attitudes and behaviors toward sexual minorities, there remains a need to enhance cultural competence related to sexual minorities.[34,35] This study marks the first translation of the GAP scale into Chinese and evaluates its psychometric properties. The results demonstrated that the C-GAP scale has strong reliability and validity, making it an effective instrument for assessing nurses' beliefs and behaviors toward gay and lesbian clients. By utilizing the C-GAP scale, nursing managers can systematically assess the current state of nurses' beliefs and behaviors and implement targeted training to address identified gaps.[18] This approach ensures that nurses are better equipped to provide culturally competent care and foster a more inclusive and supportive health care environment.[35,36] The C-GAP scale can significantly enhance the quality of care for gay and lesbian clients, enabling medical institutions to offer respectful and affirmative care consistently.

The C-GAP scale has demonstrated strong reliability. In the reliability analysis, the Cronbach α and split-half reliability coefficients of the scale exceeded the reference values[23,32] and were slightly higher than those of the original and Polish versions.[15,37] This suggests that the scale has excellent internal consistency. Furthermore, the previously assessed nurses were reevaluated 2 weeks later, and the test-retest reliability coefficient fell within an acceptable range,[32] indicating that the scale maintains measurement stability over time.[38] Item analysis revealed that the item-to-total correlations and corrected item-to-total correlations for each item exceeded 0.30,[39] demonstrating that the items effectively measure the same underlying construct. The C-GAP scale also displayed significant discriminatory power when results were compared between the high and low groups for each item, effectively assessing practitioners' adherence to principles aligned with their GAP levels. The C-GAP and the original scales differed due to cultural factors. Specifically, items 4, 7, 15, and 21 of the original scale were modified to fit China's social background. These minor adaptations did not significantly affect the overall score, thereby expanding the measurement's utility. Cultural adaptations were made to the scale to better fit China's social context. These adjustments did not significantly affect the overall score, consequently enhancing the relevance and utility of the scale.The C-GAP scale has demonstrated strong validity. The results indicated that the C-GAP aligned dimensionally with the original scale, as revealed by exploratory factor analysis, which identified 2 factors. Confirmatory factor analysis reinforced the factorial structure of the scale, demonstrating that the goodness-of-fit indices confirmed the proposed model and established congruence between the C-GAP and the original English version. The expected theoretical model was validated by confirmatory factor analysis, which yielded satisfactory model fit indices.[30] Additionally, the AVE and CR values were adequate, with the square root of AVE values exceeding the correlation coefficients between the corresponding factors.[32] The correlation between the total scores of the C-GAP and MCSD scales was 0.85 ($P > .05$), suggesting a nonsignificant correlation. These findings imply that the C-GAP and MCSD scales are independent, indicating that the GAP scale is not influenced by social expectations and demonstrates good discriminant and convergent validity.

Limitations

This study has several limitations. Although the sample size was substantial, it consisted of a convenience sample of nurses from Dalian, China, and had limited representation of male nurses. Consequently, the findings may not be generalizable to all Chinese nurses. Additionally, since the sample was restricted to nurses, the results may not be applicable to other professional groups, such as counselors and therapists,

which limits the broader applicability of the findings. Moreover, this study did not include measures to comprehensively assess structural validity. While evaluating discriminant validity through sociodemographic differences, such as religiosity (low vs high) and age (young vs old), is important, this analysis was not conducted. Future research should address these gaps by investigating such differences and utilizing latent factor scores to validate the discriminant validity of the measures used.

Conclusion

The C-GAP scale was successfully introduced and demonstrated strong psychometric characteristics among clinical nurses. The C-GAP scale, comprising 30 items, was effectively understood by all participants, who completed it within 10 to 15 minutes. This suggests that the scale is practical and user-friendly. Implementing the C-GAP scale in educational and clinical settings can help nurses acquire the knowledge and skills necessary to provide compassionate and informed care for gay and lesbian clients.

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Supplementary material

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Conflicts of interest

The authors reported no potential conflicts of interest.

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