An Evaluation of the Attitudes and Beliefs of Physicians and Pharmacists towards Complementary and Alternative Medicine Based on CAMBI and another Instrument

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Authors' contributions

This work was carried out in collaboration among all authors. Authors ET, KJ, JEC and RK designed the study and all the authors put together the research proposal. Author TT produced the questionnaire with input from all the other authors. Author TT also performed the statistical analysis. Author ET wrote the first draft of the manuscript. Authors KJ, JEC, RK and TT managed the literature searches. All authors read and approved the final manuscript.

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ABSTRACT

Aims: To investigate the attitudes and beliefs of physicians and pharmacists towards Complementary and Alternative Medicine (CAM) using two instruments: the Complementary and Alternative Belief Inventory (CAMBI) and the Attitudes to Alternative Medicine.
Study Design: This was a cross-sectional study of registered physicians and pharmacists attending their conferences or Continuing Pharmacy Education (CPE) sessions in Guyana.
Place and Duration of Study: Pharmacists attending their first CPE for 2015 and physicians at their annual Medical Conference participated.

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Methodology: A pre-tested, self-administered questionnaire was used and 274 persons (140 physicians and 134 pharmacists) participated. One section of the questionnaire, utilised the CAMBI to measure three constructs: beliefs in holistic health, natural treatments, and participation in treatment. The other section focused on attitudes to Alternative Medicine. Confirmatory Factor Analysis (CFA) and structural equations modelling were employed in the analysis of the data.

Results: For the CAMBI, a final model was obtained following the removal of several items that lacked validity and statistical significance. Most of the participants (56%) were 20-30 years old and most (52%) of them had 5 years or less professional experience. Overall, the participants were not closed to the use of CAM but there was some scepticism. Physicians believed more strongly in holistic health than pharmacists, but the latter group showed a more positive attitude to involvement in the CAM environment. Attitudes were not affected by age nor area of practice but were influenced by profession, gender, ethnicity, years of professional service and whether or not they attended the local university.

Conclusion: The CAMBI performed poorly and would have to be revised to suit the local context in future studies. Overall, most participants had some reservations about CAM. Emphasis on holistic health and CAM should be prioritised in any training at the undergraduate level or any continuing education sessions.

Keywords: Attitudes; complementary; alternative medicine; pharmacists; physicians; Guyana.

1. INTRODUCTION

Complementary and Alternative Medicine (CAM) can include the use of medicinal plants, meditation/yoga, massage, and special diets [1]. Nearly 80% of the world's population either depend on or have used some form of traditional medicine/CAM [1]. Although there has been a remarkable increase in the use of traditional medicine worldwide, most health care professionals (HCPs) are unaware of the risks and benefits [2]. Furthermore, patients sometimes self-medicate with herbal medicine but do not convey this information to their physicians or pharmacists [3,4] and even when they do, many HCPs are dismissive of the patients' CAM usage [5]. This is even though many HCPs personally use CAM, but they are often loathe to recommend it to their patients. For example, a study in Trinidad and Tobago found that 83% of pharmacists and 65% of doctors use CAM but only 50% and 26% respectively, would advocate the use of CAM to their patients [5].

To address the disconnect, some researchers recommend changes in university curricula to increase the awareness of medical students and pharmacists in relation to herbal medicines [6,7]. This kind of change is still ongoing but concurrent with the global movement towards protecting medicinal plants, studies of knowledge, attitudes, and practices (KAP) of HCPs in relation to CAM are emerging in the literature [8].

This paper investigates the attitudes and beliefs of pharmacists and physicians towards CAM using survey data collected in Guyana. Based on information from studies done around the world [9,10,11], it can be assumed that a substantial proportion of the Guyanese population would have either heard of or used CAM at some point. Pharmacists and physicians are two groups of stakeholders who have much direct interaction with a large number of patients. Understanding their views about CAM, and their perspectives on involvement in the alternative medicine environment would be an important contribution to understanding KAP in relation to CAM in general.

Notwithstanding the emergence of KAP studies of HCPs in relation to CAM in the literature, there is still a paucity of research on this phenomenon. This study, therefore, contributes to improved understanding of the phenomenon and such a study, focusing on the role of CAM, could eventually assist in directing future therapeutic strategies in a more comprehensive and systematic manner. In addition, this study evaluates the measurements involved in two CAM attitudes and beliefs instruments in a new context which will contribute to understanding the measurement of the constructs involved.

2. MATERIALS AND METHODS

2.1 Study Design and Sample

The study was cross-sectional with an approximate duration of 15 months – from June 2014 to August 2015. It was conducted in

Guyana with registered physicians practicing modern medicine; who have the qualification of MBBS or MD and above; and registered, practicing pharmacists who have the qualification of Associate Degree/Diploma in Pharmacy and above. There are several ways in which HCPs can obtain their training – the University of Guyana (UG) which is the local national University, offers a MBBS degree as well as a BSc in Pharmacy. Some persons have been trained in Cuba or at one of the several 'off-shore' medical schools in Guyana. The Pharmacy programme at the University of Guyana has two Natural Products courses part of which deal with the role of medicinal plants in therapy. The Medical programme does not have any similar courses [12,13].

The study participants were approached when they attended their respective annual conference (physicians) in 2014 and first Continuing Pharmacy Education (CPE) session (pharmacists) in 2015. A total of 274 health professionals participated: 140 physicians and 134 pharmacists [1]. Guyana has ten Administrative Regions and these health professionals come from all over the country to attend their respective conference/session.

2.2 Questionnaire

A self-administered, structured questionnaire focusing on the attitudes and beliefs of the respondents to CAM, was adapted from the Complementary and Alternative Medicine Belief Inventory (CAMBI) [14]. The CAMBI consists of 17 items scored on 5-point fully labelled (agree/disagree) rating scales. The items are identified as measuring three constructs: belief in holistic health (items 12 – 17), belief in natural treatments (items 1-6), and belief in participation in treatment (items 7-11) (see Table 1) [14]. No modifications or adaptations of the CAMBI items were made in the questionnaire.

Another section of the questionnaire focused on Attitudes to Alternative Medicine using a 5-point (agree/disagree) rating scale. The items were obtained from scales developed by other researchers [15,16] (see Table 2). Three items (7,8,10) were modified to make the items

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[1] *Based on information from the Guyana Pharmacy Council and the Medical Council of Guyana, the number of registered pharmacists was 180 and the number of registered physicians was 328, respectively.*

relevant to the specific target groups (doctors/pharmacists) under study.

Items 1 to 6 (Table 2) were expected to measure a single construct focusing on general attitudes towards CAM whereas items 7 to 10 were expected to measure a construct about desirable involvement in alternative medicine by the practitioner.

At the conference/CME session, the questionnaires were distributed and collected by a team of research assistants under the supervision of a lead researcher. Every person who attended the conference/session was given a questionnaire.

2.3 Data Analysis

Statistical Package for Social Sciences (SPSS) Version 19 (SPSS Inc., Chicago, IL, USA) was used for entering and cleaning the data. The data were analysed using various techniques including using descriptive statistics for the socio-demographic variables, and confirmatory factor analysis (CFA) and structural equations modelling (SEM) for the CAMBI and opinions on holistic approaches to treatment.

The CFA component of the analysis was done using the Mplus software. In particular, CFA with robust maximum likelihood estimation was employed. The global fit of the models was evaluated using a combination of fit indices. Specifically, the root mean square error of approximation (RMSEA) less than or equal to 0.05, comparative fit index (CFI) greater than or equal to 0.95, Tucker-Lewis index (TLI) greater than or equal to 0.95 and the standardised root mean square residual (SRMR) less than or equal to 0.05 were identified as indications of good global fit of the model to the data [17,18,19]. The chi-square statistic for the estimated models was also reported.

3. RESULTS

3.1 Sociodemographics

Most of the participants (56.4%) were in the 20-30-year-old range and this was also reflected in both the group of physicians (55.7%) and the group of pharmacists (57.1%). Approximately 60.3% were female but a closer perusal of the two cohorts showed that the predominance of females was in the Pharmacy (72.5%) profession rather than the physicians (48.9%).

Table 1. CAMBI Items

Items
1. Treatments in general should have no negative side effects
2. It is important to me that treatments are non-toxic
3. Treatments should only use natural ingredients
4. It is important for treatments to boost the patient's immune system
5. Treatments should enable the patient's body to heal itself
6. Treatments should increase the body's natural ability to stay healthy
7. Patients should be regarded as equal partners
8. Patients should take an active role in their treatment
9. Treatment providers should make all decisions about treatment
10. Treatment providers should help patients make their own decisions about treatment
11. Treatment providers should control what is talked about during consultations
12. Health is about harmonising the body, mind, and spirit
13. Imbalances in a person's life are a major cause of illness
14. Treatments should concentrate only on symptoms rather than the whole person
15. Treatments should focus on people's overall well-being
16. The human body has a natural ability to heal itself
17. There is no need for treatments to be concerned with natural healing abilities

Item scales: 1 Completely disagree, 2 disagree, 3 neither agree nor disagree, 4 agree, 5 completely agree

Table 2. Measurement of attitudes towards complementary and alternative medicine

Items
1. Alternative medicine forms a threat to public health.
2. If treatments have not been tested in a scientifically recognised manner, their application must be discouraged.
3. Alternative medicine is a useful supplement of conventional medicine.
4. The results of alternative medicine are in most cases due to the placebo effect.
5. Alternative medicine includes ideas and methods from which conventional medicine can benefit.
6. Most alternative treatments stimulate the body's natural therapeutic abilities.
7. A doctor/pharmacist should have some knowledge about the most important alternative treatments.
8. A doctor/pharmacist must (get to) know alternative practitioners in the area.
9. If a patient has any questions about alternative medicine his doctor/pharmacist must be able to answer these.
10. A doctor/pharmacist must be able to advise his patients about alternative methods.

Item scales: 1 Completely disagree, 2 disagree, 3 neither agree nor disagree, 4 agree, 5 completely agree

A small percentage of persons had post-graduate experience (13.5%) as compared to those who did not (86.5%) and whereas most of the pharmacists (96.8%) received their education at the local university (UG); most of the physicians did not (77%). The largest ethnic group was Indo-Guyanese overall (45.9%) followed by Afro-Guyanese (26.1%). Most of the participants (52%) had five years or less professional experience and most (65%) were working in Region 4 (Demerara-Mahaica) which is the Region with the highest population and where the capital lies [20].

3.2 CAMBI Items

The CAMBI items were analysed to determine whether the three-factor structure was relevant in the Guyanese context. This is essentially an attempt to determine whether the constructs that the items were intended to measure were the same as a prerequisite to comparing physicians and pharmacists on the constructs.

The initial confirmatory factor model (Model 1: Table 3) for the CAMBI scale failed to fit the data adequately. The chi-square statistic is significant, both the CFI and TLI are lower than 0.95 and the

SRMR is larger than 0.05 (Table 3). The model results indicate that five items (5, 9, 11, 14 and 17; see Table 2 – CAMBI items) are not significant indicators of the intended constructs. These items were therefore dropped from consideration. Dropping the items would affect the interpretation of the factors. Nevertheless, this action is necessary to avoid compounding errors by including irrelevant items with respect to the Guyanese context.

The modified CAMBI model (Model 2: Table 3) also failed to fit well. This time, each of the three constructs were affected by items that did not contribute much to its measurement. The items lacked convergent validity (items and loading were 1 (0.30), 2 (0.19), 3 (0.28), 10 (0.35) and 16 (0.24)) even though there is statistical significance. These items are also dropped from the analysis which means that the compositions of the constructs are even further affected.

The final revised model was a good fit for the data with respect to all the indices and also the chi-square statistic (Model 3: Table 3). In this model, belief in holistic health is measured by items 12, 13 and 15 with standardised loadings 0.60, 0.59 and 0.56 respectively; belief in natural treatments by items 4 and 6 with standardised loadings 0.42 and 0.95 respectively; and belief in participation in treatment by items 7 and 8 with standardised loadings 0.60 and 0.56 respectively.

The sizes of the factor loading were not all ideal (less than 0.70) which signalled lingering problems with the measurements. Nevertheless, there is some indication that the constructs can be recovered from the data though the recovery was poor and there were substantial modifications of the original measures. The items as proposed, therefore seem less than ideal for measuring the constructs in the Guyanese context and this indicates a need for further research on the measurements.

The means of the revised CAMBI constructs for the Guyanese context are above the scale point 4 (agree) (Table 4). Given the rating scales used and the wording of the items, these means indicate generally positive beliefs in relation to CAM.

For the comparison of physicians and pharmacists on the constructs, a structural equations model was employed with a dummy variable for profession (1=physician, 0=pharmacist). In addition, the model included age, sex, ethnicity, experience, and region of residence as predictors (see coding in Table 5). Education was dropped from consideration because it led to nonconvergence perhaps due to sparseness at the higher level of education. The approach used to compare the groups was employed primarily because splitting the sample to execute multigroup analysis can lead to sample size issues which can affect the stability of the model estimates. An overarching issue is that the use of the latent variables as estimated was desired rather than to return to the averages of the observed items which would not allow corrections for measurement errors.

The fit of the model was not excellent (Chi-square=75.67, df=45, RMSEA=0.04, CFI=0.89, TLI=0.81, SRMR=0.05). The results indicate that the only construct for which there is any significant effects is holistic health (see Table 5). Furthermore, only a single variable (profession) accounts for the significant effect encountered. In particular, physicians believe more strongly in holistic health than pharmacists. The profession of the respondents explains approximately 10% of the variance in the holistic health factor.

Table 3. Fit of the CAMBI model

Model	Chi-Square	Df	p-value	RMSEA	CFI	TLI	SRMR
Model 1	229.74	116	0.000	0.06	0.65	0.59	0.07
Model 2	94.41	51	0.000	0.05	0.88	0.85	0.06
Model 3	10.45	11	0.490	0	1	1	0.02

Table 4. CAMBI construct means

Construct	N	Mean	SD
Holistic Health	257	4.19	0.29
Natural Treatments	247	4.05	0.16
Participation in Treatment	251	4.33	0.40

The means are the average scores over the observed items

Table 5. Structural equations model for CAMBI constructs

Variable	Construct		
	HH	**NT**	**PT**
Age 21 – 30 (baseline = age >40)	-0.03 (0.16)	0.09 (0.15)	0.10 (0.12)
Age 31 – 40 (baseline = age >40	0.21 (0.15)	0.12 (0.16)	0.12 (0.13)
Gender (1= male; 0= female)	-0.15 (0.08)	-0.06 (0.10)	0.07 (0.08)
Ethnicity (1= majority, 0 = minority)	-0.11 (0.09)	-0.07 (0.09)	-0.09 (0.08)
University (1= University of Guyana, 0 = other)	-0.03 (0.11)	-0.12 (0.11)	-0.12 (0.10)
Profession (1 = physician, 0 = pharmacist)	0.16* (0.08)	-0.08 (0.11)	0.03 (0.11)
Experience (1= more than 5, 0= 5 or less)	0.03 (0.10)	-0.03 (0.10)	0.11 (0.09)
Region (1= region 4, 0=other)	0.08 (0.11)	0.05 (0.10)	0.13 (0.08)
R-squared	0.10*	0.03	0.07

* significant at the 5% level. HH – holistic health, NT – natural treatment, PT – participation in treatment.
The table shows the estimates along with their standard errors enclosed in brackets

3.3 Attitude to Alternative Medicine

The items for attitude towards Alternative Medicine was measured by a scale consisting of ten items [15,16] (Table 2). The items were expected to measure two constructs and the extent to which this held, was evaluated using the CFA framework following which the model was extended into a full structural model to enable evaluation of the effect of profession and other variables.

The initial CFA model failed to fit the data adequately with respect to each index (Model 1: Table 6). The standardised loading for the indicators of desirable involvement in alternative medicine range between 0.61 and 0.82. Although all the loadings are not all ideal, this construct appears to have been recovered adequately from the data.

In contrast, the measurement of general attitude towards alternative medicine, did not perform well. Three items (items 3, 5 and 6) had relatively large negative loadings and the remaining three (items 1, 2, and 4) had very small positive loadings. In a second step, the negatively and positively worded (loading) items were split into different constructs. The resulting model (Model 2: Table 6) fit adequately except for a low loading of item 2 (0.30). As an alternative to dropping the item altogether, it was used to measure a separate construct in a final model configuration (Model 3: Table 6). This was done because, although the item wording appeared to be negative, it expressed a closed position to alternative medicine, asserting that its use should be discouraged.

The model modifications led to four correlated constructs: positive attitude measured by items 3, 5 and 6; negative attitude measured by items 1 and 4; closed measured by item 2; and desirable involvement in alternative medicine environment measured by items 7 – 10. The standardised loadings for positive attitude ranged between 0.55 and 0.58, those for negative attitude between 0.45 and 0.46 and those for desirable involvement from 0.62 to 0.82. Though this model was accepted, it should be noted that the factor loadings generally indicate relatively low convergent validity.

Table 6. Fit of the model for attitude towards alternative medicine scale

Model	Chi-Square	df	p-value	RMSEA	CFI	TLI	SRMR
Model 1	84.80	34	0.000	0.07	0.88	0.84	0.07
Model 2	57.73	32	0.004	0.05	0.94	0.92	0.05
Model 3	55.90	30	0.003	0.05	0.94	0.91	0.04

Table 7. Means of the attitude towards alternative medicine constructs

Construct	N	Mean	SD
Positive attitude towards alternative medicine	260	3.61	0.10
Negative attitude towards alternative medicine	263	2.64	0.33
Closed attitude towards alternative medicine	265	3.51	1.06
Knowledge about the alternative medicine environment	265	3.68	0.25

The means are the average scores over the relevant observed items

Table 8. Structural equations model for attitudes towards alternative medicine

Variable	Construct			
	Positive	**Negative**	**Closed**	**Involve**
Age 21 – 30 (baseline = age >40)	-0.17 (0.16)	0.22 (0.20)	0.27 (0.26)	0.17 (0.12)
Age 31 – 40 (baseline = age >40	-0.17 (0.13)	0.07 (0.20)	0.41 (0.24)	0.13 (0.10)
Gender (1= male; 0= female)	0.01 (0.09)	0.05 (0.12)	-0.32* (0.15)	-0.02 (0.06)
Ethnicity (1= majority, 0 = minority)	-0.33* (0.09)	0.24* (0.11)	0.55* (0.14)	-0.14* (0.07)
University (1= University of Guyana, 0 = other)	-0.01 (0.13)	0.36* (0.16)	-0.07 (0.16)	-0.15 (0.08)
Profession (1= physician, 0 = pharmacist)	0.10 (0.14)	0.24 (0.15)	0.24 (0.16)	-0.27* (0.08)
Experience (1= more than 5, 0= 5 or less)	-0.23* (0.12)	-0.06 (0.15)	0.10 (0.18)	-0.10 (0.08)
Region (1= region 4, 0=other)	0.13 (0.10)	0.02 (0.13)	0.16 (0.17)	0.09 (0.07)
R-Squared	0.21*	0.16*	0.10*	0.17*

* significant at the 5% level.
The table shows the coefficient along with their standard errors enclosed in brackets

That the means of the constructs are positioned close to the middle of the respective scales (Table 7) suggests, that the existing attitudes towards alternative medicine are not particularly strong in any direction. The mean for closed attitude is a bit lower but not so much as to indicate a large shift from the midpoint.

To examine the effects of the background variables on the constructs, a structural equation model is estimated (see Table 8). In the model, neither age nor area of practice (region) have an effect on the constructs, but the remaining variables have significant effects depending on the construct.

3.3.1 Profession

The profession of the practitioner is significantly related to only the attitude towards desirable involvement in the alternative medicine environment. Physicians are not as positive as pharmacists in their attitude in this regard. Knowing about the alternative treatments and the alternative medicine practitioners in the area seem to matter less to physicians than pharmacists.

3.3.2 Gender

Gender is significantly related to a closed attitude towards alternative medicine. Males are more favourably disposed to the use of alternative medicine than females.

3.3.3 Ethnicity

Ethnicity is related to each construct. Practitioners of the majority ethnicity in comparison to those of a minority ethnicity have weaker positive, stronger negative and more closed attitudes towards alternative medicine and are less favourable in terms of their attitudes towards desirable involvement in the alternative medicine environment.

3.3.4 Education

The variable captures whether or not the individual was educated at the local university - UG or elsewhere. The results indicate that those who studied at UG have a stronger negative attitude towards alternative medicine.

3.3.5 Experience

This variable is significantly related to a positive attitude towards alternative medicine. Support for alternative medicine therefore appears to be stronger among those who are newer to the respective professions.

4. DISCUSSION

One of the issues addressed in this study is whether instruments for attitude towards CAM measure the intended constructs well in the Guyanese context. In this regard, the CAMBI instrument designed by Bishop and colleagues [14] and the one for attitudes towards CAM [15,16] were analysed as a precursor to application to the substantive issues of establishing what attitudes exist and comparing practitioners on them. We found that the CAMBI as proposed performed poorly. It required several modifications and several items had to be excluded and even then, there remained some limitations on the measurements. Other researchers had found that their instrument did not perform well when compared to the model

developed by Bishop and colleagues and attributed this to the heterogeneity of their sample [21]. The researchers postulated that the different educational, demographic, and cultural backgrounds of their participants contributed to varying interpretations and responses to the CAMBI items [21]. Our sample was much more homogenous, and we did not seem to have the kind of cultural and educational diversity within our sample to result in the difficulties observed. It is much more likely that the differences in culture between where the instrument was developed and where we tested it, accounted for the issues that we encountered.

The items for attitude towards CAM fared somewhat better insofar as none of them had to be removed entirely. Nevertheless, with the exception of desirable involvement in alternative medicine environment, there were substantial modifications to the configuration of the model leading to essentially different measurements from what was intended.

These realities underscore two important matters: (1) importation of instruments that were developed and tested elsewhere might not result in the desired measurements so that local evaluation is necessary and (2) there is a need for work on developing appropriate instruments for measurement of attitudes towards CAM in Guyana and other similar contexts. In part, this further work should include additional confirmatory evaluation of the existing scales to further validate the modifications made in the present study. Nevertheless, we were still able to obtain some useful substantive results even with the measurements utilised.

This study investigated the attitudes and beliefs of certain HCPs to CAM. The HCPs in our study view CAM with varying degrees of favourability and this is reflected in other studies on physicians [5,22] and pharmacists [23,24] but some had a closed attitude. The literature suggests that closed attitudes are not uncommon, but this could be addressed with educational intervention as well as evidence-based scientific research [22].

We investigated the influence of the demographic variables on these attitudes and found some interesting results. Whereas studies have found that females tend to be more supportive of alternative medicine than males [25,26], our study found that males were more supportive. This was initially surprising, as the literature has shown that women use health care

services more than men [27], However we postulate that males may not have the patience nor inclination to seek treatment at a medical institution and are more protective of their privacy and therefore prefer to use alternative medicine.

In relation to ethnicity, our findings show that Indo-Guyanese (majority ethnicity) tended to be less sympathetic to the use of alternative medicine. Most of the Guyanese population, are descendants of either African slaves or Indian indentured labourers who would have brought their own healing practices [28,29]. Post slavery, Afro-Guyanese tended to utilise 'bush doctors' and obeah to relieve both physical and psychological ailments [28,29]. A study on the use of medicinal herbs by Surinamese migrants in the Netherlands indicated that Afro-Surinamese were more than twice as likely as Hindustani counterparts to use medicinal plants [30] and this would seem to be consistent with the current findings for Guyana.

Professional experience was also a significant correlate of attitude to CAM and we observed that persons who were young in the profession were more positive about alternative medicine. This is consistent with the results of studies in the US and Canada where physicians who had just completed their studies were more in favour of CAM use than their more experienced colleagues [22,25]. Worldwide there is a shift towards the consumption of natural and organic foods [31], and we propose that more emphasis, on the Internet and, social media and media advertisements, is being placed on Nutraceuticals/botanicals which is impacting the views of primarily a younger audience [32].

In addition, it is also possible that the curricula at the Cuban medical schools and the 'off-shore' medical schools are more focused on CAM which could account for their graduates having a more positive attitude to CAM than graduates from UG. Future studies can investigate and compare the different curricula to determine the gaps, with an aim of eventually ensuring that all new graduates have similar levels of training with respect to CAM.

With respect to CAMBI, physicians had a more positive outlook about holistic health than pharmacists. However, these groups of professionals were similar in relation to their beliefs about natural treatment and patient participation in treatment. A question that arises is whether the observed difference evidence greater concern for ethical issues on the part of

the physicians. In particular, the physicians might have been trained to consider the whole person but not necessarily in terms of CAM. Again, this points to the necessity of introducing formal training about CAM into the curricula.

Our study also found that pharmacists viewed alternative medicine with more optimism than physicians. Physicians were not as positive as pharmacists in their attitudes towards desirable involvement in alternative medicine environments and furthermore, knowing about the alternative treatments and those who practice them in Guyana seemed to matter more to the pharmacists than to the physicians. Our findings were anticipated as pharmacists receive formal training in Natural Products in the Pharmacy programme at UG whilst there is no such training in the MBBS programme [12,13].

We would recommend that formal education about CAM be introduced into the MBBS and strengthened in the Pharmacy programme at UG. This recommendation was made by others. For example, the study in Egypt postulated that training in CAM at the undergraduate level would positively influence attitudes towards indigenous treatment options [6]. Continuing Education (CE) sessions which specifically focus on CAM should be conducted.

One of the limitations of this study was that it was not randomised; however, the use of participants attending their conferences/first CE session of the year, meant that we sampled a wide cross-section of physicians and pharmacists from both the public and private institutions throughout the country. These events are usually well attended as they offer an opportunity for persons to obtain their full CE credits and so we believe that our findings are a good, nation-wide representation of the attitudes and beliefs of this group of HCPs.

Another limitation stems from the fact there remained some issues of low item convergent validity in the models estimated. This can affect the reliability of the results.

5. CONCLUSION

Although the measurements employed did not perform very well, some useful information about attitudes to CAM was gleaned. It would be important to use or develop appropriate instruments tailored to the local context in future studies.

Overall, the beliefs of the respondents with respect to CAM were generally positive.

Physicians seemed to have a more favourable view of holistic health when considering the well-being of a patient, whereas pharmacists viewed involvement in the alternative medicine environment more favourably.

The HCPs were generally ambivalent in their attitudes towards alternative medicine. Attitudes towards alternative medicine were not affected by age and area of practice (Region) but were influenced by the type of profession, gender, ethnicity, university attended, and time spent in the profession depending on which specific construct was considered. Physicians compared to pharmacists, females compared to males, and those in their profession for more than five years compared to newcomers were less likely to approve of CAM.

CONSENT

Completion of the questionnaire was taken as consent to participate in the study. Completion of the questionnaire was taken as giving consent to participate in the study and the very nature of self-administered questionnaires protected the anonymity and privacy of the participants.

ETHICAL APPROVAL

The Ministry of Public Health, Institutional Review Board gave ethical approval to conduct this study which was received and preserved by the authors.

The participants were told about the nature, purpose, and outcome of the research and that it was completely voluntary.

The research proposal, including the questionnaire, was approved by the Ministry of Public Health (MoPH), Institutional Review Board (IRB). The MoPH IRB approval for Protocol #197 was dated 3/07/2014 and the document number was FWA00014641.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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