



# Predictors of Unmet Traditional, Complementary and Alternative Medicine Need Among Persons of Sub-Saharan African Origin Living in the Greater Toronto Area

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## Abstract

Our study seeks to examine how chronic health status, insurance coverage and socioeconomic factors predict unmet traditional, complementary and alternative medicine (TCAM) needs among immigrants from sub-Saharan African origin living in the Greater Toronto Area (GTA). The data for the study comes from a cross-sectional questionnaire survey of 273 sub-Saharan African immigrants living in the GTA. ~21% of respondents surveyed had unmet TCAM needs in the 12-month period prior to the survey. Persons with chronic health conditions, lower socioeconomic status, and those with previous history of TCAM use before immigrating were more likely to have unmet TCAM need. The study suggests that the current TCAM healthcare environment in the GTA limits that ability of sub-Saharan immigrants to meet their healthcare needs, especially persons in most need of such treatments—persons with chronic health conditions and those of lower socioeconomic background.

**Keywords** Canada · Immigrants · Unmet healthcare needs · Traditional · complementary and alternative medicine (TCAM) · Sub-saharan africans

## Introduction

There is a growing global appeal for traditional, complementary and alternative medicine (TCAM) among patients and the general population. A plethora of literature and studies have captured the growth of public interest in TCAM [1–3]. The growing interest in TCAM is mainly because of patterns of TCAM care utilisation among the population in both developed and developing countries. Evidence in existing studies suggests that half of the population in developed countries use TCAM, while the proportion for the population in developing countries is even greater [4]. In sub-Saharan Africa (SSA), the appeal of TCAM among the general population is often attributed to what Anyinam [5] terms as the four “As”—accessibility, availability, affordability and

acceptability. TCAM, mainly, traditional or indigenous healing practices and remedies are usually based on the ethno-cultural system of local communities hence its practices and beliefs are embraced by the members of the community [6]. TCAM remedies are also easily accessible and sourced from the immediate environment, making it an affordable option of care compared to biomedical care [7, 8].

There has been significant growth in the number and proportion of immigrants from developing countries living in Canada over the last three decades [9]. Recent immigration figures show a continuous increase in the number of immigrants from Africa and Canadians of SSA origin. Between 2006 and 2011, an estimated 145,700 immigrants arrived in Canada from Africa, representing 12.5% of newcomers within that period (an increase from 10.3% in 2000–2005, 7.3% in 1990, and 1.9% before the 1970s) [9]. Within this context, existing studies show that ethnic and racial minorities face significant challenges in their access and use of biomedical care services; even in a public-funded healthcare system, such as the Canadian healthcare system [10–13].

Studies in Canada and other parts of the developed world shows that ethnic/racial minorities and persons of immigrant origin (especially those from the global south) have lower levels of healthcare accessibility and utilization

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compared to the native-born population and non-visible minority immigrants [10–12]. Choi [14] posits that interaction of social, cultural and individual socioeconomic characteristics influences immigrants' access and use of healthcare services. The lack of cultural empathy among biomedical professionals [15, 16], structural racism [17, 18], lack of family doctors and language barriers—for recent migrants [19, 20] have a considerable effect on the ability of ethnic and racial minorities to access and use biomedical care services. These structural and systemic barriers to biomedical care create unmet medical needs and influence the use of TCAM remedies among immigrant populations, especially among visible minorities [21–23].

Yet, the TCAM (or ethnomedical) system in Canada and many western countries is considerably different from that in SSA and developing world. In western countries, TCAM is heavily commercialised with little or no public support (funding) for its usage [4, 24, 25]. Most TCAM modalities are not covered by existing universal healthcare coverage schemes in these western countries, including Canada [2]. Studies in Canada and other western countries show that TCAM use is mainly financed through private insurance, employee-benefits or direct out-of-pocket expenditure [4, 24, 25]. In a heavily commercialised context, TCAM is only accessible to persons with higher income and those with jobs that offer employee-benefits for such treatment or care. The literature shows that persons who use TCAM tend to be middle-aged, have higher education and income [1, 25, 26]. With regards to sociodemographic, the literature also shows that the growth of TCAM therapies, particularly chiropractic, massage and acupuncture, is more noticeable among non-Hispanic whites than other racial minority groups [27, 28]. Among patients with chronic pain, the finding indicates that black patients are 50% less likely to use TCAM services compared to white patients [29]. Interestingly, the research also reveals that the use of non-professional based TCAM, such as prayers, tends to be higher among blacks and persons of lower socioeconomic status [30, 31].

While the studies on determinants and users of TCAM abound, knowledge on potential unmet TCAM need among the general population and other sub-groups of interest remain unknown. Our study seeks to fill this gap in the research and literature by exploring unmet TCAM use among sub-Saharan Africans living in the Greater Toronto Area (GTA), given the relevance of TCAM for this group of Canadian residents and the differences in TCAM systems in Canada and their countries of origin. Such knowledge is also necessary for creating an inclusive healthcare system that meets the medical needs and demands of immigrants and racial/ethnic minorities. The study also examines how health and socioeconomic factors predict unmet TCAM needs among sub-Saharan Africans living in the GTA.

## Data and Methods

The data for this study came from a doctoral research project on TCAM use among sub-Saharan African immigrants living in the GTA. The fieldwork for the project was carried out over 14 months, from July, 2017 to August, 2018. Participants for the survey were recruited through respondent-driven sampling (RDS) technique; given the absence of a sampling frame for the target population. RDS is a non-probability sampling technique employed for studies involving hard-to-reach populations or hidden populations [32]. The target population of a study is termed hidden or hard-to-reach when there is no sampling frame or list of the targeted population being studied, and there is an existence of a substantial privacy concern [33, 34]. RDS is a traditional sampling method for gathering representative data from a sub-cultural group or a socially networked group [32]. The approach is based on the notion that respondents of a particular socio-cultural group are better able to locate and recruit members than researchers. A detailed explanation of the RDS process is described elsewhere [32–34]. An initial seed of 12 respondents was selected from key Anglophone West African immigrant community organisations, mainly from the Ghanaian Canadian Association of Ontario (GCAO), the Nigerian Canadian Association (NCA) and the Joint Help Support Association of Sierra Leone, at the beginning of the fieldwork. Subsequent waves of respondents were recruited with the help of the 12 sampling seeds. Interested respondents completed a paper-based or online survey (administered through Google Forms) based on their preference. A total of 273 respondents participated in the questionnaire survey; that is, the total sample for this study. Both modes of the survey were completely anonymised. The research project and RDS protocol were approved by the General Research Ethics Board (GREB) of Queen's University.

## Measures

Our dependent variable—unmet TCAM need—was measured using the following question in the survey: “During the past 12 months, was there ever a time when you felt that you needed a traditional (e.g. traditional African medicine, traditional Chinese medicine and Ayurvedic), a complementary or an alternative medicine (e.g. chiropractic, massage therapy, acupuncture, homoeopathy) but you could get it or did not receive it?”. The response was binary coded as “1 = Yes” and “0 = No”. In a follow-up question, respondents were asked to state why they did not get the needed TCAM care (an open-ended question).

In line with the focus of our research, our predictor variables measure health status, insurance coverage,

sociodemographic characteristics and previous history of TCAM use. In the survey, respondents were asked if they have any chronic health condition; we used this question as our measure of chronic health status. Respondents were also asked if they had a functional disability in any of the 6 activities of daily living (ADL) (bathing, dressing, toileting, transferring, continence and eating or feeding). Respondents who had a disability in one or more ADL functions were coded as having functional disability while those who did not have any functional limitations were coded others. Health insurance status was measured with two indicators: coverage under the provincial health-care plan and coverage under an extended health benefits plan. Age, sex, marital status, highest level of education, household income and immigration status were used as measures of socioeconomic status. Respondents were also asked about their use of TCAM prior to immigration to Canada.

## Analysis

Our analysis included univariate, bivariate and multivariate statistics. We performed univariate analysis to examine the distribution of respondents by our study variables. Next, a cross-tabulation computation was done to examine the association between our predictor variables and unmet TCAM needs among the respondents. Pearson's chi-square test was used to examine the association between our predictors and outcome variables; we employed Cramer's V test to determine the strength of the association. For Cramer's V test, values less than 0.20 show a weak association, values  $\geq 0.20$  and  $< 0.30$  demonstrate a moderate association and values  $\geq 0.30$  show a strong association. We built three models to examine the predictive association between the predictors and the unmet TCAM need in our multivariate analysis. The first model (Model 1) examines how health status and insurance coverage predict unmet TCAM needs. The second model (Model 2) examines the association between sociodemographic factors and unmet TCAM need; while the final model (Model 3) includes all the predictors in Models 1 and 2, as well as, history of TCAM use before moving to Canada as an additional covariate. Our dependent variable was binary and asymmetrically distributed hence we employed the complementary log log link function for our multivariate analysis. For easy interpretation of the findings, the exponential beta coefficients ( $\exp\beta$ ) are reported for the multivariate complementary logistic regression analysis. All statistical analyses were performed using STATA (version 14.2) software package by StataCorp (College Station, TX).

## Result

The descriptive result (Table 1) shows that ~ 21% of respondents had unmet TCAM need in the 12 months period prior to the survey. The majority of respondents stated unavailability of the remedies they needed in Canada as the reason for their unmet TCAM need as shown in the word cloud (Fig. 1). Around 18.3% and 8.8% of respondents had chronic health conditions and functional disabilities, respectively. The vast majority of respondents were covered by the provincial health insurance program (91.9%) and had extended health coverage (79.1%) through work or private purchase. With regards to socioeconomic characteristics, a relative majority of our respondents were females (53.5%), married or common-law (69.2%), had post-secondary education (82.1%), lived in households with an annual income of \$80,000 or more (61.5%) and were citizens of Canada (74.4%). Approximately 51.3% of respondents indicated they used TCAM before immigrating to Canada.

Table 2 shows the result of our cross-tabulation analysis. Chronic health status, age and TCAM use before immigration were strongly associated with unmet TCAM needs. The result indicates that a higher proportion (66.0%) of persons with chronic conditions had unmet TCAM needs in the 12 months prior to the survey. It also shows that the proportion of persons with unmet TCAM need was relatively higher among respondents aged 60 years and above (53.3%). Around 32% of respondents that used TCAM before immigration noted they had unmet TCAM need compared to ~ 6% of respondents who did not use TCAM prior to immigration. Functional disability was moderately associated with unmet TCAM needs ( $V = 0.22$ ,  $p < 0.001$ ). With the exception of provincial health insurance coverage, sex and household income, all predictor variables were significantly associated with unmet TCAM need.

Table 3 shows the result of our multivariate analysis. In Model 1, the result indicates that chronic health status, functional disability and extended health coverage are significantly associated with unmet TCAM needs. Persons with chronic health conditions ( $\exp\beta 10.94$ ,  $p < 0.001$ ) and those with functional disability ( $\exp\beta 3.07$ ,  $p < 0.01$ ) were more likely to have unmet TCAM needs. Persons with extended health coverage ( $\exp\beta 0.58$ ,  $p < 0.1$ ) were less likely to have unmet TCAM needs. For socioeconomic factors (Model 2), the result shows that respondents' age, education and immigration status significantly predict unmet TCAM needs. Younger persons, compared to those aged 60 years and above, were less likely to have unmet TCAM needs. Respondents with secondary education and below were more likely to have unmet TCAM needs. Persons in the other category of immigration status were

**Table 1** Descriptive summary of study variables n=273

	Frequency	%
<b>Outcomes</b>		
Unmet TCAM need		
No	216	79.1
Yes	57	20.8
<b>Health and insurance status</b>		
Chronic health status		
No	223	81.7
Yes	50	18.3
Functional disability		
No	249	91.2
Yes	24	8.8
Provincial health coverage		
No	22	8.1
Yes	251	91.9
Additional health coverage		
No	57	20.9
Yes	216	79.1
<b>Socioeconomic factors</b>		
Age		
18 to 24 years	21	7.7
25 to 34 years	66	24.2
35 to 44 years	77	28.2
45 to 59 years	79	28.9
60 years and above	30	11.0
Sex		
Male	127	46.5
Female	146	53.5
Marital status		
Married/common-law	189	69.2
Widowed/sep/divorced	21	7.7
Single/never married	63	23.1
Education		
Secondary education and below	49	17.9
Post-secondary education	224	82.1
Household income		
< \$20,000	8	2.9
\$20,000–\$39,999	23	8.4
\$40,000–\$59,999	33	12.1
\$60,000–\$79,999	41	15.1
\$80,000 or more	168	61.5
Immigration status		
Citizen	203	74.4
Permanent resident	48	17.6
Other	22	8.0
TCAM use—prior to immigration		
No	140	51.3
Yes	133	48.7

also more likely to have unmet TCAM needs. In the final model (Model 3), chronic health status and functional disability remained significant predictors of unmet TCAM needs after introducing additional covariates. Again, persons with chronic health status ( $\text{exp}\beta$  8.85,  $p < 0.001$ ) and those with functional disabilities ( $\text{exp}\beta$  3.86,  $p < 0.001$ ) were more likely to have unmet TCAM need. The statistical significance of extended health coverage waned in our final model. Similarly, the statistical significance of age also waned in the final model. Persons with secondary education and below, and those in “other” immigration status were more likely to have unmet TCAM need. The model also shows that income was significantly associated with unmet TCAM, persons in higher income households were less likely to have unmet TCAM need—the association was only significant for persons in households with an annual income of \$40,000 to \$59,999. Prior history of TCAM use was a significant predictor of unmet TCAM need; the rate ratio for unmet TCAM needs among persons who used TCAM before their immigration to Canada increased by a factor of 2.93 ( $\text{exp}\beta$  2.93,  $p < 0.001$ ).

## Discussion

Our study explored the effect of health status, health insurance coverage and socioeconomic factors on unmet TCAM needs among immigrants of sub-Saharan African origin living in the GTA. The findings of the study show that a significant proportion of respondents surveyed had unmet TCAM needs. The major explanation for these unmet needs was the unavailability of indigenous African healing remedies and practitioners in the Canadian and GTA (Fig. 1). With the absence of traditional African healing remedies and practitioners in the country, sub-Saharan African immigrants in need of TCAM for their health and healthcare needs may have to travel back to their countries of origin for cure or treatment. Thus, treatment for the health condition may be delayed until ‘usual’ visits to countries of origin [35, 36]. Immigrants may also rely on their transnational networks both in host countries and countries of origin in their quest to access and use traditional healing remedies [23, 37]. Friends and family members in both host country and country of origin may provide financial support to facilitate travel back to countries of origin or help in finding remedies by sending or bring the remedies from visits to countries of origin [37]

Both our bivariate and multivariate analyses show that chronic health status and functional disability are significantly associated with unmet TCAM need. While the research shows people with chronic health status use TCAM the most, we argue that chronic health conditions may render respondents economically inactive, contributing their inability to access the TCAM remedies they need. This situation

**Fig. 1** A word cloud of reasons for unmet needs



is plausible, given the current provincial healthcare plans do not provide adequate coverage for TCAM treatments. In Ontario, the provincial healthcare plan (OHIP) does not provide coverage for TCAM remedies, including chiropractic services. Coverage for some TCAM remedies is done through third-party coverage (the Extended Healthcare plan) which are usually provided by some employers and through direct out-of-pocket expenditure [4, 24, 25]. The disabling effect of chronic health conditions may limit respondents' access to jobs and their subsequent access to employment-related health benefits. Thus, their inability to pay for the cost associated with accessing TCAM in Canada or their ability to travel back “home” for TCAM treatment.

Regarding socioeconomic factors, our findings indicate that respondents of lower socioeconomic status are more likely to have unmet TCAM needs. Similarly to the explanation above, we argue that the current health financing options for TCAM in Canada and other western countries inhibit the ability of persons with limited financial resources to access and use TCAM when needed [25, 38]. Older adults and less-educated respondents may not have employment or hold jobs that offer healthcare benefits for TCAM treatment. Likewise, they may not have the financial capability to travel back to their countries of origin for TCAM treatment compared to persons of higher socioeconomic status who have the means. Respondents in the “other” immigration category may be in a similar situation, as most of these respondents were international students with study visas.

Our study has its limitations. First, the lack of a sample frame for the study population (persons of SSA origin living in the GTA) and the small sample size imply the findings of this study may not be generalisable for the entire study

population. There is the possibility of selection bias in the sampling process, and the distribution of the study sample by socioeconomic status potentially shows this. The proportion of persons with lower levels of education and persons of low-income status in the study sample may be considerably lower than the proportion in the actual population. Second, the data for this study was obtained through a cross-sectional survey. This implies that we cannot assume causality between the set of predictors used in the study and the outcome variable of interest (unmet TCAM need). Lastly, health and socioeconomic characteristics were self-reported; thus, there is a possibility for respondents to overestimate or underreport their health and socioeconomic status.

## Conclusion

The limitation of this study notwithstanding, the findings of the research offer a valuable contribution to the literature on TCAM. To the best of our knowledge, our study is the first to explore unmet TCAM needs among sub-Saharan African immigrants living in the diaspora. The study suggests that the current TCAM healthcare environment in the GTA (and Canada at large) limits that ability of sub-Saharan immigrants to meet their healthcare needs, especially persons in most need of such treatments—persons with chronic health conditions and those of lower socioeconomic background. Future studies can investigate this topic further and also explore transnational healthcare seeking for TCAM in countries of origin for sub-Saharan immigrants in the diaspora.

**Table 2** Cross-tabulation analysis of unmet TCAM needs among persons of SSA origin living in GTA

	Yes	No	$\chi^2$ (Cramer's V)
<b>Health and insurance status</b>			
Chronic health status			
No	10.8	89.8	75.43 (0.53)***
Yes	66.0	34.0	
Functional disability			
No	18.1	81.9	13.51 (0.22)***
Yes	50.0	50.0	
Provincial health coverage			
No	19.1	80.9	0.03 (0.01)
Yes	20.7	79.3	
Additional health coverage			
No	29.8	70.2	3.49 (– 0.11) <sup>+</sup>
Yes	18.5	81.5	
<b>Socioeconomic factors</b>			
Age			
18 to 24 years	9.5	90.5	
25 to 34 years	15.2	84.8	
35 to 44 years	7.8	92.2	33.30 (0.35)***
45 to 59 years	29.1	70.9	
60 years and above	53.3	46.7	
Sex			
Male	23.6	76.4	1.08 (– 0.06)
Female	18.5	81.5	
Marital status			
Married/common-law	23.3	76.7	
Widowed/sep/divorced	28.6	71.4	5.05 (0.14) <sup>+</sup>
Single/never married	11.1	88.9	
Education			
Secondary education and below	18.3	81.7	5.01 (0.14)*
Post-secondary education	32.6	67.4	
Household income			
< \$20,000	40.0	60.0	
\$20,000–\$39,999	17.4	82.6	
\$40,000–\$59,999	15.2	84.8	3.37 (0.11)
\$60,000–\$79,999	17.9	82.1	
\$80,000 or more	22.1	77.9	
Immigration status			
Citizen	23.7	76.3	
Permanent resident	6.3	93.7	7.70 (0.17)*
Other	27.3	72.7	
TCAM use—prior to immigration			
No	6.0	94.0	27.50 (0.32)***
Yes	32.0	68.0	

\*\*\*  $p < 0.001$ , \*\*  $p < 0.01$ , \*  $p < 0.05$ , +  $p < 0.1$

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## Compliance with Ethical Standards

**Conflict of interest** The authors declare that they have no conflict of interest.

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**Table 3** Predictors of unmet TCAM needs among Persons of SSA origin living in GTA

	Model 1	Model 2	Model 3
Health and insurance status			
Chronic health status			
No			
Yes	10.94 (3.28)***		8.85 (3.72)***
Functional disability			
No			
Yes	3.07 (1.14)**		3.86 (1.58)***
Provincial health coverage			
No			
Yes	0.47 (0.26)		6.72 (8.06)
Additional health coverage			
No			
Yes	0.58 (0.19) <sup>+</sup>		0.75 (0.28)
Socioeconomic factors			
Age			
60 years and above (ref)			
45 to 59 years		0.44 (0.15)*	0.63 (0.26)
35 to 44 years		0.14 (0.07)***	0.69 (0.44)
25 to 34 years		0.24 (0.14)*	0.96 (0.69)
18 to 24 years		0.12 (0.12)*	0.552 (0.66)
Sex			
Male (ref)			
Female		0.73 (0.22)	0.84 (0.28)
Marital status			
Married/common-law (ref)			
Widowed/sep/divorced		1.85 (0.91)	1.23 (0.66)
Single/never married		0.71 (0.45)	1.55 (1.13)
Education			
Post-secondary education (ref)			
Secondary education and below		1.85 (0.62) <sup>+</sup>	2.42 (0.96)*
Household income			
< \$20,000 (ref)			
\$20,000–\$39,999		0.26 (0.21)	0.85 (0.779)
\$40,000–\$59,999		0.42 (0.29)	0.27 (0.20) <sup>+</sup>
\$60,000–\$79,999		0.47 (0.33)	0.94 (0.71)
\$80,000 or more		0.79 (0.49)	0.91 (0.59)
Immigration status			
Citizen (ref)			
Permanent resident		0.51 (0.32)	0.74 (0.51)
Other		5.27 (3.98)*	14.42 (14.92)*
TCAM use—prior to immigration			
No (ref)			
Yes			2.93 (1.66)*
Model diagnostics			
Wald Chi-square	73.59***	48.10***	94.52***
AIC	211.69	263.52	220.67
BIC	229.74	317.66	292.86

Robust standard error in parenthesis; \*\*\*p < 0.001, \*\*p < 0.01, \*p < 0.05, <sup>+</sup>p < 0.1

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