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Opinion

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Political Asylum, Anthropology and the Role of the Expert Witness

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INTRODUCTION

When I took my first course in anthropology in 1961, I was a student of biology (major) at Bucknell University, Lewisburg, PA, USA. When I went to Africa for the first time in 1964 to build a school and teach biology, or when I was studying Yoruba social organization at Temple University from 1966 to 1968, or when I did my PhD research on Nubian ethnography at Northwestern, I had never imagined that this trail through Africa would conceivably lead me to become an Expert Witness in political asylum cases. Probably, in those years there were no anthropology courses on such a topic although law schools dealing with immigration law certainly had a role for this professional need. Indeed, in those Cold War years, immigration was a minor national issue and there was only a relative trickle of refugees coming from conflict zones of Africa and the Middle East.

Now, I have had asylum cases on 4 continents, testified and consulted in scores and scores of asylum cases and have read and followed the British Ikarian Reefer guidelines, as well as Practice Directions 10 and 35 on the role of Experts and Assessors for First-Tier Tribunal and Upper Tribunals. In addition, I am familiar with the United Kingdom (UK) Asylum and Immigration Tribunal document of November 4th, 2009 and the points, 3.10.2 and 3.10.3 arose about Non-Arab Darfur which state 65 different ethnic groups in Darfur especially those referenced in Operation Guidance Notes. Furthermore, I am familiar with the role of the Expert Country Evidence in Asylum and Immigrations Cases in the UK; Best Practices Guide, of July 2013. As well, in the USA I have studied the legal grounds for political asylum (*vs.* economic refugees), the United Nations Convention Against Torture, worked with and, sometimes against, the Immigration and Naturalization Service (INS), Department of Homeland Security (DHS) and Immigration and Customs Enforcement (ICE) as well as provisions for asylum proscribed by the United Nations. In many cases, I have not met the asylum claimants, but I have also found them among personal friends, and helped folks across borders and to sanctuary.

This is a long step from being an undergraduate biology and anthropology student to part-time Expert Witness. But the four fields of holistic American anthropology led me to non-western Studies, to language acquisition (especially Arabic dialects and Nilo-Saharan languages). Long-term residence in Africa, as part of participant observations led me to explore, learn and know about country conditions. Cultural relativism brought me to humanistic concern and understanding for others. Ethics in anthropology taught me about the principles of 'do no harm' and 'informed consent' while membership in Human Rights Watch and Amnesty International kept me abreast of current issues in this field. Studying war, directly on the ground as an embedded journalist in several African conflicts, in Sudan, South Sudan, Eritrea, and Guinea-Bissau gave me practical understanding of the tactical, strategic, and personal complexities of conflicts. Assassinations and executions of friends and associates only tempered the steel needed to venture further into this domain. Finally, working as a civilian professor for a military college showed me the importance of pre-empting conflict, shortening conflict, and reconstructing after conflict to address the fundamental reasons for desperate people to flee for their lives and seek asylum in the first place.

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What is Required to be an Expert Witness?

The basic requirement to be considered as an Expert Witness is to be formally and academically credentialed by appropriate degrees and with pertinent publications on regions and countries which have produced asylum seekers. Thus, most in this role are in middle or late career positions. Also, it is required that one is very current in the country conditions which have caused flight or prevent return. As a 'news junkie', this is pretty easy for me, and as a teacher of security and counter-terrorism issues for the military, my American and foreign military students are assigned as "desk officers" for specific nations that are already on the insecurity or failed state horizon. So, I can convince lawyers and judges that I am credentialed and informed about present country conditions.

Since my testimony is sworn and notarized against charges of perjury, I must '*tell the truth, the whole truth, and nothing but the truth'*. All questions and my answers must have total fidelity to the facts as best as I know them. I have had cases when my testimony is by CCTV to jails and detention centers and the client is freed from orange jump suits, to cases where the claimant finally is awarded a green card and freedom, to cases where my testimony kept a claimant in prison, to cases where clients had committed minor or very serious felonies and was not worthy of asylum but deportation should be withheld until governance by civil law may be restored in their home nation.

"Typical" Cases

Each case is an individual trapped in circumstances they did not usually cause, and, in fact, will not be considered for asylum if they served in a violent way for or against their enemies. I am generally familiar with the circumstances of the clients by their affidavits. Usually, I have not met in person but have learned of his or her situation through his attorneys and sometimes interviewed by telephone and Skype. We discuss various topics in colloquial Arabic, French or English to get a better understanding of their claim and for me to be confident of their personal veracity and to confirm their credibility. While I do not speak the many minority languages used in ethnically plural Africa, I have sometimes used published lexicons to determine their protected ethnic status. I must be confident, and will confirm, that the client understood my Arabic. I am able to differentiate Egyptian Arabic, from Classical and Quranic Arabic, Tunisian Arabic from southern Sudanese and Darfur accents and as well I can follow a dictionary in KiNubi (Kenya) with some of its cognates in Ki-Swahili. I took courses on Arabic at Northwestern University, Harvard University and American University in Cairo. I have conducted research and guided tours in Sudan and Egypt in Arabic without a translator for almost half a century. I mention this because this is helpful to determine speakers' origins even when they are speaking their versions of Arabic even when they are not speaking their native non-Arabic languages (Rotana).

With the above considerations in mind, I must be convinced about their reasonable depth of knowledge about their home land in terms of local events, kinship, ethnicity, local sub-tribes, environmental conditions, numbers and types of livestock, regional history, cultural and local and some national politics in their country of origin for someone of their age at that time. As long as I find, by these means, that there were no inconsistencies, I could voice support for the claims that were being made. The complexities of racio-ethnic and linguistic identities in Africa are such that they are thousands of people (most often refugees from war) residing in refugee camps, prisons and fleeing across the Sahara to grave dangers in Libya and crossing the Atlantic or Mediterranean, I can verify that I have no professional doubt with the specific and contextual evidence that the client is, who they say they are, and has experienced what they claim that may include arbitrary arrest, lack of legal defense, arbitrary detention, no habeas corpus, held incommunicado ill treatment, notorious prison conditions, beatings, torture, lack of transparency, accountability or appeal and immunity from prosecution and much worse that are all well-known and documented for failed states and military regimes.

Finally, I, formally declare that "I understand that it is not my duty to assess credibility, but feel confident about his or her straightforward honesty. He or She is furthermore at serious to grave risk if forced to return. I also confirm that insofar as the facts stated in my report are within my own knowledge. I have made clear which they are and I believe them to be true, and that the opinions I have expressed represent my true and complete professional opinion. I have endeavored to include in my report those matters, which I have knowledge of, or of which I have been made aware, that might adversely affect the validity of my opinion. I have indicated the possible sources of all information I have used. I have not (without forming an independent view) included or excluded anything which has been suggested to me by others. I can confirm that I have not entered into any agreement where the amount or payment of fees is in any way dependent on the outcome of the case."

Very respectfully,

Then, I step off the stand or away from the telephone and the immigration judge determines the fate of the claimant. I am not sure if I almost always win these cases because my testimony is so convincing, or if the reputation of the countries at hand is so bad, but I give a supporting voice to the needy and desperate and that is the biggest satisfaction of all.

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Research

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Socio-Economic and Demographic Correlates of Overweight and Obesity: A Study on the Karbi Women of Assam, Northeast India

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ABSTRACT

Background: Excess adiposity is a chronic condition that contributes to non-communicable disease (NCD) related morbidities, mortalities and causes public health problems.
Objectives: The objectives of the present community based cross-sectional study were to assess the prevalence of overweight and obesity and its socio-economic and demographic concomitants among a group of Karbi women of Assam, Northeast India.
Material and Methods: The study was carried out among 600 Karbi married women aged 20-49 years in Karbi-Anglong district of Assam, Northeast India. Height and weight were recorded and body mass index (BMI= weight (kg)/ height^2 (m^2)} was calculated. The prevalence of overweight (BMI≥23.00-24.99 kg/m^2) and obesity (BMI≥25.00 kg/m^2) were assessed using the Asian-Pacific population reference cut-offs. Data on the socio-economic, demographic and lifestyle variables were collected using a pre-structured questionnaire.
Results: The prevalence of overweight and obesity were 17.33% and 14.33%, respectively. Binary logistic regression (BLR) analysis showed that age at the time of interview, family size, ≥4 number of dependent children, alcohol consumption, tobacco use and monthly per-capita income were the significantly risk factors for both combined overweight-obesity and obesity independently (p<0.05). Step-wise multiple logistic regression showed that age at the time of interview (30-39 years) (p<0.01), consumption of alcohol (p<0.05) and use of tobacco (p<0.05) remain the significant risk factors for combined overweight-obesity; and age at the time of interview (30-39 years) (p<0.01), monthly per-capita income (p<0.05) and number of dependent children (p<0.01) for obesity.
Conclusion: Prevalence of overweight and obesity is emerging as a public health issue among the indigenous Karbi women of Assam. The results suggest that increase in age, alcohol consumption, tobacco use, number of dependent children and family income were the major predictive variables that increases the prevalence of excess adiposity. Appropriate healthcare strategies and intervention programmes are required to reduce subsequent complications of excess adiposity in this population.

KEY WORDS: BMI; Obesity; Socio-demographic; Karbi population; Assam.

ABBREVIATIONS: NCD: Non-Communicable Disease; ANOVA: One way analysis of variance; BLR: Binary Logistic Regression; CIs: Confidence Intervals.

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INTRODUCTION

Overweight or obesity is a serious chronic condition contributing to non-communicable disease (NCD) related mortalities, morbidities and causes major public health problems. The World Health Organization (WHO) has declared that obesity is one of present day's most blatantly visible, yet most neglected public health problems that require urgent interventions.[1] A recent global data shows that approximately 1.5 billion and 500 million adults (aged ≥20 years) were observed to be overweight and obese, respectively.[2] Studies have also confirmed the existence of 'double nutritional burden' which is becoming increasingly apparent in addition to double burden of NCDs affecting several developing countries.[3-8] It has been reported that a number of socio-economic, demographic, biological, socio-cultural, genetic, environmental and behavioural factors are responsible for these events in population.[5,9,10] Excess adiposity is usually attributed to genetic predisposition and this along with an obesogenic environment is considered to be the major promoting factor for overweight and obesity among individuals. For example, factors such as lifestyle (e.g., alcohol consumption, tobacco use), demographic (e.g., age, family size) and higher socio-economic status (e.g., higher education and family income) increases the prevalence of excess adiposity among such individuals.[10,11] The determination of these factors that appear to have the potential to affect overweight and obesity may be very constructive to design specific intervention programme and prevention strategies across populations.

In India, the prevalence of overweight and obesity is currently becoming one of the major public health issues. On one hand, studies indicated that such prevalence is more pronounced among those individuals residing in the urban and sub-urban areas when compared to the rural areas of the country.[3-6,11-14] On the other hand, few studies reported the effects of different socio-economic, demographic and lifestyle factors related to overweight and obesity among Indian populations.[3,4,11,13,15,16] Therefore, there appears to be a need to study the possible association of socio-economic and demographic factors affecting the excess adiposity patterns among individuals. The identification of potential risk factors(s) for excess adiposity is a very challenging task for any researcher focused on population-specific investigations. The idea that attainment of higher education, socio-economic status and development and lifestyle modification (especially sedentary lifestyle and/or decreasing the physical activity and alcohol consumption) with increasing age leads to the development of excess adiposity among women constituted the research question of the present study. The objectives were to determine the prevalence of overweight and obesity and also to ascertain the associations of socio-economic, demographic and lifestyle-related factors with overweight and obesity among women belonging to an indigenous tribal population of Northeast India.

METHODS

Subjects and Study Area

The present community-based cross-sectional study was conducted on 600 adult ever married women belonging to the Karbi population, a scheduled tribe residing in the Karbi-Anglong district of Assam, Northeast India. Ethnically, the Karbi population belongs to the Tibeto-Mongoloid population and speaks Tibeto-Burman language. They are mainly concentrated in the Karbi-Anglong, Dima Hasao, Kamrup, Morigaon, Nagaon, Golaghat, Karimganj, Lakhimpur and Sonitpur districts of the state of Assam, Northeast India. They are also found to inhabit the states of Nagaland, Arunachal Pradesh and Meghalaya. All the study participants were the residents of Karbi-Anglong district (25°33′ N to 26°35′ N latitude and 92°10′ E to 93°50′ E longitude) of the state of Assam, Northeast India. A total of seven villages mainly inhibited by a homogeneous Karbi tribal population situated approximately 160 km from the district town of Diphu, Karbi-Anglong were covered in course of the present study. The Karbi-Anglong is the largest district amongst the 28 districts of Assam and covers an area of 10,434 km^2. According to the National Census[17], the district had a population of 9,65,280 individuals (males: 4,93,482; females: 4,71,798) with an average literacy rate of 59.52% (males: 56.82%; females: 43.18%).

The minimum number of individuals required for reliably estimating the prevalence of overweight and obesity in the present study was calculated following a standard method of estimating sample size.[18] In this method, the anticipated population proportion of 50%, absolute precision of 5% and confidence interval of 95% were taken into consideration. The prevalence of overweight and obesity among Indian adult women as reported by Sen et al[13], Rengma et al[16], Asthana et al[19] and Bhadra et al[20] were kept in mind while calculating the minimum sample size. This prevalence was observed to be up to 50% in these aforementioned studies. The minimum sample size, thus estimated by the method[18] was 384 individuals. In the first stage, the households of those individuals belonging to the Karbi population were identified based on the surnames and cultural traits. In the second stage, a total of 400 Karbi households were identified and finally 684 ever married Karbi women in the age group of 20-49 years of those households were finally selected for the present study. The age of the participants at the time of interview were subsequently recorded and verified from the birth certificates, identity cards and other official documents issued by the Government of India. A total of 684 Karbi women belonging to the selected age group 20-49 years were then approached for voluntarily participat in the study. The objectives of the study were explained to them before participation in the study. A section of the participants (12.28%) refused to participate. Hence, the final sample size was 600 women in the age group of 20-49 years, and this was appreciably higher than the minimum sample size calculated earlier following the standard method.[18] A verbal consent was obtained from the participants prior to collection of the data. Each woman was interviewed and measured at her respective household. Permission to conduct the research was obtained from the village level local authorities (the village headmen) and the Department of Anthropology, Assam University (Diphu campus) prior to conducting the study. The study was conducted in accordance with the ethical guidelines for human experimen-

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tal research as laid down in the Helsinki Declaration of 2000.[21] The data were collected during the period from October 2011 to November 2012.

Socio-economic, Demographic and Lifestyle Variables Recorded

A structured schedule was utilized to obtain the necessary information on age at the time of interview, family size, number of dependent children, monthly family income (in Indian rupees or INR), educational status, marital status, alcohol consumption and tobacco use among the individuals. Per-capita monthly family income (INR) was calculated by dividing the monthly family income by the total number of family members. This schedule has been validated in an earlier community-based cross-sectional study among adult individuals belonging to the Rengma population of Assam, Northeast India.[16] Individuals who consumed alcohol least once in a week comprised the alcohol-consumed category. The tobacco-used group comprised of those who had a daily habit of tobacco chewing or smoking.[13] In order to elicit valid responses ample care (e.g., day/weekly consumption of alcohol or tobacco use) was taken while briefing the questions to the participants at the time of interview. The schedule was completed by interviewing participants by one of the author (RT) in their respective households.

Anthropometric Measurements Recorded

Anthropometric measurements of height and weight were recorded using standard procedures.[22] Height was recorded with the help of an anthropometer rod, with the participant standing erect, looking straight and the head oriented in the Frankfort horizontal plane. It was measured to the nearest 0.10 cm. Weight was taken using a portable weighing machine with the participant wearing minimum clothing to the nearest 0.10 kg. The subjects covered in the course of this study were measured with ample precision to avoid any possible systematic errors (e.g., instrumental or definition of landmarks) in the process of anthropometric data collection.[23]

Intra-observer and inter-observer technical errors of the measurements (TEM) were calculated to determine the accuracy of the measurements using the standard procedure.[24] The TEM was calculated using the following equation:

$TEM=\sqrt{(\Sigma D^2/2N)}$, [D=difference between the measurements, N=number of individuals].

The co-efficient of reliability (R) was subsequently calculated from TEM using the following equation:

$R=\{1-(TEM)^2/SD^2\}$, SD=standard deviation of the measurements.

For calculating TEM, height and weight were recorded from 50 Karbi women other than those selected for the study by two of the authors (NM and RT). Very high values were observed of R (>0.975) for both height and weight and these values were within the acceptable limits of 0.95 as recommended.[24] Hence, the measurements recorded by NM and RT were considered to be reliable and reproducible. All the measurements in the course of the present study were subsequently recorded by both of them.

Assessment of Nutritional Status

The prevalence of overweight and obesity was determined using body mass index (BMI). This index has been calculated using the following formula[25]:

$BMI\ (kg/m^2) = Weight\ (kg)/Height^2\ (m^2)\}$

The WHO[25] had proposed a redefined classification for overweight and obesity based on BMI applicable for the Asia-Pacific populations so as to evaluate their prevalence. These new BMI cut-offs have been used to determine overweight (BMI≥23.00-24.99 kg/m^2) and obesity (BMI≥25.00 kg/m^2). The combined overweight-obesity category comprised those with a BMI ≥23.00 kg/m^2.

Statistical Analysis

The statistical analyses were done using the Statistical Package for Social Science (SPSS, Inc., Chicago, IL, USA, version 17.0). The *p*-value of <0.05 was considered to be statistically significant. Homogeneity of variance was tested using Levene's test of equality of variance. The women were grouped into three age-specific categories (i.e., 20-29 years, 30-39 years and 40-49 years) to understand the effect of age on the anthropometric variables. One way analysis of variance (ANOVA) using the Scheffe post hoc multiple comparisons was done to assess differences in the anthropometric variables among different age groups. A binary logistic regression (BLR) analysis was undertaken to estimate the odds ratios (ORs), minimum of 95% confidence intervals (CIs) and to assess the possible differences in risk factors associated with those individuals being combined-overweight and obesity (BMI≥23.00 kg/m^2) and obese (BMI≥25.00 kg/m^2) separately. In the BLR analysis, the different socio-economic, demographic and lifestyle predictor variables were used as univariate independent regression model analyses. To create the dichotomous dependent variables, women who were overweight (combined overweight: BMI≥23.00 kg/m^2) were coded as '1' in the respective BLR model. Similarly, women who happen to be obese (BMI≥25.00 kg/m^2) were also coded as '1' in the respective BLR model. Women who exhibited normal BMI were coded as '0' in the BLR models. These different regression models were utilized to identify the possible risk factor(s) associated with different excess adiposity levels (overweight and obesity). A step-wise multiple logistic regression analysis (Forward conditional model) was also undertaken to determine the most effective independent factor(s) risk associated with overweight and obesity from those determinant variables considered in the BLR

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analysis. Those dependent variables have shown the significant associations in the univariate BLR analysis were tested to predict the most effective predictor variables in step-wise multiple logistic regression model analysis. It is to be mentioned here that these predictor variables were arbitrarily grouped into different sub-categories to find out the possible associations with the prevalence of overweight and obesity. The predictor variables of age (20-29 years, 30-39 years and 40-49 years) family size (≤4, 5-6 and ≥7) dependent children (0-1, 2-3 and ≥4), education (≤8th grade and ≥9th grade), alcohol consumption (never and occasional/regular), tobacco use (never and regular), and monthly per-capita income (Rupees <1000 and Rupees ≥1000) were entered into the regression equation as a set of dummy variables and results were obtained by comparing them with the reference categories separately.

RESULTS

The age-specific participant's distribution, descriptive statistics (mean±standard deviation) and 95% CIs of weight, height and BMI among the Karbi married women are shown in Table 1. For the better understanding of the results, the participants were categorized into three different age groups (20-29 years, 30-39 years and 40-49 years). The overall mean of weight, height and BMI were observed to be 49.41±7.15 (kg), 1.50 ±0.05 (m) and 22.06±2.87 (kg/m^2), respectively. Using the Levene's test of equality of variance, it was observed that for weight (Levene=9.34), height (Levene=3.57) and BMI (Levene=14.30), the *p*-values were statistically significant ($p<0.05$). Comparisons of age specific means showed that weight, height and BMI were observed to be higher among the participants aged 30-39 years. The lowest values were obtained among those aged 20-29 years. ANOVA shows that the mean values for weight ($p<0.01$) and BMI ($p<0.01$) differ significantly across the age groups but not for height ($p>0.05$) (Table 1). Using Scheffe post hoc test, the multiple comparisons of mean between the age groups were observed to be statistically significant only for weight and BMI (in 20-29 years *vs*. 30-39 years and 30-39 years vs. 40-49 years) ($p<0.01$).

Prevalence of Overweight and Obesity

The overall prevalence of overweight (BMI≥23.00-24.99 kg/m^2) and obesity (BMI≥25.00 kg/m^2) was observed to be 17.33% and 14.33% respectively. The overall excess adiposity (combined overweight-obesity: ≥BMI 23.00 kg/m^2) was documented to be

Table 1: Age Specific Subject Distribution and Descriptive Statistics of the Anthropometric Variables Among the Karbi Women.

Anthropometric variables	20-29 years (N=326)	30-39 years (N=170)	40-49 years (N=104)	Overall (N=600)	F-value	*p*
Weight (kg)	48.14±5.91 (47.50-48.79)	52.14±8.11 (50.91-53.36)	48.90±7.85 (48.83-49.98)	49.41±7.15 (48.83-49.98)	18.77	0.00
Height (m)	1.49±0.05 (1.49-1.50)	1.50±0.05 (1.50-1.51)	1.49±0.06 (1.48-1.51)	1.50 ±0.05 (1.49-1.50)	2.59	0.07
BMI (kg/m^2)	21.59±2.42 (21.33-21.86)	23.07 ±3.45 (22.54-23.59)	21.85±2.71 (21.32-22.38)	22.06±2.87 (21.83-22.29)	15.85	0.001

Values in parentheses indicate 95% CI of mean±standard deviation.

Table 2: Descriptive Tables Showing the Distribution of Socio-economic, Demographic and Lifestyle Variables and Prevalence of Combined Overweight-Obesity (≥23.00 kg/m^2) and Obesity (≥25.00 kg/m^2) Among the Karbi Women.

Variables		Frequency (N=600)	Combined Overweight (≥23.00 kg/m^2) [N=190 (31.67%)]	Obesity (≥25.00 kg/m^2) [N=86 (14.33%)]
Age at the time of interview (years)	20-29	326 (54.33)	83 (25.46)	29 (8.90)
	30-39	170 (28.33)	79 (46.47)	45 (26.47)
	40-49	104 (17.33)	28 (26.92)	12 (11.54)
Family size (Number of Individuals)	≤4	240 (40.00)	62 (25.83)	26 (10.83)
	5-6	214 (35.67)	75 (35.05)	37 (17.29)
	≥ 7	146 (24.33)	53 (36.30)	23 (15.75)
Number of Dependent Children	0-1	204 (34.00)	55 (26.96)	18 (8.82)
	2-3	256 (42.67)	77 (26.96)	41 (16.02)
	≥4	140 (23.33)	58 (41.23)	27 (19.29)
Education	≤8th standard	406 (67.67)	119 (29.31)	47 (11.58)
	≥9th standard	194 (32.33)	71 (36.59)	39 (20.10)
Alcohol Consumption	Never	242 (40.33)	51 (20.07)	19 (7.85)
	Occasional/Regular	358 (59.67)	139 (38.83)	67 (18.72)
Tobacco Use	Never	363 (60.50)	102 (28.10)	47 (12.95)
	Regular	237 (39.50)	88 (37.13)	39 (16.46)
Monthly per-capita income (Indian Rupees or INR)	Rs. <1000	316 (52.67)	89 (28.16)	30 (9.49)
	Rs. ≥1000	284 (47.33)	101 (35.56)	56 (19.72)

*$p<0.05$, **$p<0.01$, Values in parentheses indicates percentage.

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31.67% (Table 2). The age-specific prevalence of overweight and obesity among the women was observed to be higher among the age groups 30-39 years and 40-49 years, respectively. However, lower prevalence of overweight and obesity was noticed among those in the age group 20-29 years. The distribution of socio-economic, demographic and lifestyle variables with the prevalence of combined overweight-obesity and obesity among Karbi women is depicted in Table 2. The prevalence of combined overweight-obesity and obesity was observed to be higher among women of 30-39 years and among those with ≥4 number of dependent children. The prevalence of overweight and obesity were observed to be higher among women who attended education up to ≤8th grade, consumed alcohol, regularly used tobacco and belonged to a higher per-capita monthly income category (≥Rupees 1000).

The results of the BLR analysis showed that in case of combined overweight-obesity, significantly higher odds were observed among the age group 30-39 years (odds: 2.54; $p<0.01$), in case of participants with family size (5-6) (odds 1.55, $p<0.05$) and ≥7 (odds 1.64, $p<0.05$) independently, ≥4 dependent children (1.92, $p<0.01$), those who regularly used tobacco (odds 1.51, $p<0.05$) and occasionally/regularly consumed alcohol (odds 1.87, $p<0.05$). Similarly, the likelihood of obesity increases for participants belonging to the age group 30-39 years (odds: 3.69, $p<0.01$), ≥9th grade education (odds: 1.92, $p<0.01$), and live with 2-3 (odds $p<0.01$), who consumed alcohol occasionally/ regularly (odds: 1.83, $p<0.05$) and fall in the monthly per-capita income category ≥Rupees 1000 (odds 2.34, $p<0.01$) (Table 3).

The results of the step-wise multiple logistic regression analyses (Forward conditional model) were undertaken to determine the most independent socio-economic and demographic predictor variables for combined overweight-obesity (BMI ≥23.00 kg/m^2) and obesity (BMI ≥25.00 kg/m^2) (Table 4). The result of the final model showed that age category 30-39 years (odds 2.25, $p<0.01$), occasional/regular consumption of alcohol (odds 1.68, $p<0.01$) and regular use of tobacco (odds 1.44, $p<0.05$) remain the significant risk factors for combined overweight-obesity. Similarly, the age group 30-39 years (odds 2.95, $p<0.01$), fall in the monthly per- capita income category ≥Rupees 1000 (odds 1.99, p<0.05) and live with 2-3 (odds 2.82, $p<0.01$) and ≥ 4 number of dependent children (odds 3.02, $p<0.01$) remain as a significant risk factors for obesity.

DISCUSSION

The increase in the prevalence of excess adiposity (i.e., overweight and obesity) varies across populations and has increased alarmingly during the past two decades with obesity rates being tripled in the developing countries.[26] There has also been a shift in the prevalence of excess adiposity (e.g., obesity) towards poorer socio-economic groups and women.[3-6,8,27] Excess adiposity among women could lead to an increase in obesity during pregnancy, lower the reproductive success, increase infant mortality and the frequency of fetal growth abnormalities and non-communicable diseases (e.g., gestational diabetes, hypertension and cardiovascular diseases).[28-30] Studies reported that the prevalence of gender specific overweight and obesity was observed to be higher among women than men in India.[11,13,14,16,20] The general population trend has shown that the prevalence of overweight and obesity increased slightly over the past decade in the country, but the prevalence rate has increased in urban and

Table 3: Binary Logistic Regression Analysis and Socio-economic, Demographic and Lifestyle Factors Affecting Combined Overweight-Obesity (≥23.00 kg/m^2) and Obesity (≥25.00 kg/m^2) Among the Karbi Women.

Variables		Combined overweight-obesity(≥23.00 kg/m^2) [N=190 (31.67%)]	Obesity (≥25.00 kg/m^2) [N=86 (14.33%)]
		Crude Odds (95%CI)†	Crude Odds (95%CI) †
Age at the time of interview (years)	20-29®	-	-
	30-39	2.54** (1.72-3.76)	3.69** (2.21-6.15)
	40-49	1.08 (0.65-1.78)	1.34 (0.66-2.72)
Family size (Number of Individuals)	≤4®	-	-
	5-6	1.55* (1.04-2.55)	1.72* (1.03-2.95)
	≥7	1.64* (1.05-2.55)	1.54 (0.84-2.81)
Number of Dependent Children	0-1®	-	-
	2-3	1.17 (0.77-1.75)	1.97* (1.10-3.54)
	≥4	1.92** (1.21-3.03)	2.47** (1.30-4.69)
Education	≤8th grade®	-	-
	≥9th grade	1.39 (0.97-2.00)	1.92** (1.21-3.06)
Alcohol Consumption	Never®	-	-
	Occasional/Regular	1.87* (1.31-2.65)	1.83* (1.15-2.94)
Tobacco Use	Never®	-	-
	Regular	1.51* (1.07-2.14)	1.32 (0.84-2.10)
Monthly per-capita income (Indian Rupees or INR)	Rs. <1000®		
	Rs. ≥1000	1.41 (1.00-1.99)	2.34** (1.45-3.77)

®Reference category, *$p<0.05$, **$p<0.01$, CI: Confidence interval,
Values in parentheses indicate the 95% CI of Odds ratio,
† Binary logistic regression analysis considering effect of one explanatory factor (i.e., univariate analysis).

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Table 4: Factors Associated with Combined Overweight-Obesity and Obesity Among the Karbi Women: Stepwise Logistic Multiple Regression.

Variables		Combined Overweight-obesity (≥23.00 kg/m²) [N=190 (31.67%)]			Obesity (≥25.00 kg/m²) [N=86 (14.33%)]		
		Step-1	Step-2	Step-3	Sept-1	Step-2	Step-3
		Odds¶ (95%CI)	Odds¶ (95%CI)	Odds¶ (95%CI)	Odds¶ (95%CI)	Odds¶ (95%CI)	Odds¶ (95%CI)
Age at the time of interview (years)	20-29®		-		-	-	
	30-39	2.54** (1.72-3.76)	2.25** (1.51-3.36)	2.25** (1.50-3.36)	3.69** (2.21-6.15)	3.77** (2.24-6.34)	2.95** (1.72-5.08)
	40-49	1.08 (0.65-1.78)	0.89 (0.53-1.49)	0.88 (0.52-1.48)	1.34 (0.66-2.72)	1.26 (0.61-2.59)	0.95 (0.45-2.02)
Alcohol Consumption	Never®		-	-			
	Occasional/Regular		1.74** (1.20-2.51)	1.68** (1.16-2.44)			
Tobacco Use	Never®						
	Regular			1.44* (1.00-2.06)			
Monthly per-capita income (Indian Rupees or INR)	Rs. <1000®					-	-
	Rs. ≥1000					2.44** (1.50-3.99)	1.99* (1.06-3.72)
Number of Dependent Children	0-1®						-
	2-3						2.82** (1.37-5.83)
	≥4						3.02** (1.80-5.07)

®Reference category *p<0.05, **p<0.01; **p<0.01; CI: Confidence intervals.
Values in parentheses indicate the 95% CI of Odds ratio

in high- socio-economic groups.[5] Therefore, overweight-obesity is becoming a major public health challenge for the healthcare providers and certainly contributes to an ill-health condition in the foreseeable future for the nation.

The present study is probably the first of its kind reporting the prevalence of obesity and its associated risk factors among women belonging to the indigenous Karbi population of Assam, Northeast India. It has been observed that the prevalence of obesity was observed to be slightly lower than that of overweight (14.33% *vs*. 17.33%). The comparison of the prevalence of overweight in the present study was observed to be significantly lower than the Bengalee,[20] Indian urban[31] and Tangkul Naga[11] populations. A lower prevalence of obesity has been reported than the present study among the Bengalee[13] and Kayastha[32] populations. In contrast, the prevalence of overweight was significantly higher than those reported for Indian[33], Rengma Naga[16] and Nyishi tribal[8] women. The prevalence of obesity was observed to be significantly higher than those reported from Tangkul Naga[11] and Nyishi tribal[8] women. Studies have already reported that the existence of population-specific burden of excess adiposity (overweight and obesity) was more likely to occur among women belonging to the high inequality states in India.[3,4,6,27] Such changes in nutritional conditions could be attributed to major shifts in patterns of diet and physical activities occurring over time. Therefore, the population-specific variation in excess adiposity (i.e., obesity) may be due to an improvement of socio-economic status. It may be cause due to the population experiencing a major demographic, socio-economic and nutritional transition at varying rates.[6,34,35] The possible inequalities in their nutritional status are attribute to some segments may have insufficient resources to meet their calorie requirements and/or others have more than enough resources to meet these requirements.[3,4]

The variation in excess adiposity may be attributed to being the complex interaction of genetic factors, physical activity, lifestyle and dietary habits which are related to the socio-economic environment in population.[10,13,16] Several researchers have reported that an increase in the prevalence of obesity is described as an age-related effect.[3,4,13,16,36] In the present study, the BLR and step-wise multiple logistic regression analyses have come up with some interesting observations. It has been observed that the participants who belong to age group (30-39 years) are at significantly greater risk for both combined overweight-obesity and obesity (p<0.01). A similar study among adults belonging to the indigenous Rengma Naga[16] population of Northeast India has shown that individuals belonging to age groups 30-39 years and 40-49 years had significantly greater risks of being obese (p<0.05). Studies have reported that the amount of muscularity begins to decrease and the proportion of adiposity continuously increases with an increase in age.[11,36] The increase in odds relating to overweight and obesity can thus, be related to age-affects on body adiposity.[11,13,16] The increase in overweight and obesity

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among the mid-aged (e.g., 30-39 years) women in the present study could be attributed to the accumulation of body adiposity, increased energy intake, a fat-rich diet and relatively less energy expenditure due to lesser involvement in physical activities and a general modification in lifestyles. Therefore, individuals belonging to the higher age groups are likely to develop a greater risk of adiposity that leads to a higher prevalence of overweight-obesity among adults.

It is evident that the socio-economic development is considered to be the greatest risk factor for excess adiposity among women in the developing countries, including India.[3-5,9,15,16] Studies have indicated significantly higher prevalence being observed in higher socio-economic groups in various developed countries.[4,5,37,38] However, the trend of excess adiposity was also found to be greater among women than men in the developing countries.[3,4,39] The prevalence of obesity is more common among middle-aged individuals belonging to higher socio-economic status and those living in urban-affluent societies.[4,13,34] The results of the regression analysis in the present study showed that individuals belonging to the higher monthly per-capita (INR ≥1000) had two-fold risk for obesity. Similar findings have been reported among Indian adults belonging to the Bengalee Hindu Caste population of West Bengal[13] and indigenous Rengma Naga population of Assam.[16]

Studies on urban adult individuals have reported that education had an inverse effect on excess adiposity.[10,13,15,16,40] Shafique et al[41] reported that the rural women with at least 14 years of education were observed to have an eight-fold increased risk of being overweight as compared to non-educated women in Bangladesh; the result of this study showed greater risk of obesity among women having ≥9 standard education. An earlier study among adult Rengma Naga[16] individuals of Assam had also reported an association of higher education with increased risks of being overweight and obese corroborating the findings of this study. It seems that attainment of higher education and socio-economic status probably leads to more awareness towards nutrition, specific food choices (e.g., high caloric or fat dense) and thus enhanced access to the rich foods leading to excess adiposity within the population. Therefore, further studies need to validate the possible association of detailed dietary intakes and prevalence of excess adiposity in population.

The demographic factor of higher number of dependent children (≥4 number) showed a significant almost 2.5 times and triple risk factor associated with obesity among Karbi women using BLR and step-wise multiple logistic regression analysis, respectively ($p<0.01$). A similar study of Hossain et al[42] had reported an adverse level of adiposity associated with higher number of ever born children among women of Bangladesh. The results of BLR and step-wise multiple logistic regression analyses also showed that alcohol consumption had a significant higher risk to develop excess adiposity level among the Karbi women, and thus confirming the results of the studies in population.[13,16,40] The results further indicated a significantly higher risk factor in lower adiposity with tobacco use. Although, smoking and excess adiposity (i.e., overweight) are health risk factors, they also appear to be interrelated.[13,15,16] It has also been opined that tobacco users were associated with a lower BMI and cessation was associated with excess adiposity in the form of a substantial increase of regional adiposity in adults.[43] Similarly, in the present study, a significantly greater association between tobacco use and excess adiposity (i.e., combined overweight-obesity) was observed among the women in both BLR and step-wise multiple logistic regression analyses ($p<0.05$).

CONCLUSION

The present study has reported the prevalence of excess adiposity-related to overweight and obesity among the indigenous Karbi women population of Assam, Northeast India. The prevalence may be related to urbanization, changing dietary habits, sedentary lifestyle and socio-economic status. However, at the moment we do not have any data to substantiate this explanation. The current trend has clearly indicated that a rapid increase of overweight and obesity prevalence, particularly in the vulnerable segments in urban and sub-urban regions requires urgent nutritional interventions. The prevalence of overweight and obesity among Karbi women was observed to be lower as compared to the other populations of India, but reducing such prevalence and associated risk factors require modifying the lifestyle, dietary habits, physical activities and awareness related to the healthy weight management and nutritional status among the Indian women. Although, the cross-sectional design and sample size of the present study represented a difficulty in drawing some major conclusions so as to identify the trends of excess adiposity patterns, the results suggest that increase in age, alcohol consumption, tobacco use, per-capita monthly family income and number of dependent children as major predictive variables are increases the likelihood of the high prevalence of excess adiposity (overweight and obesity). The findings of the present study are important for the effective implementation of any public health programme that needs to be initiated. There appears to be an urgent need to develop suitable health strategies as well as intervention programmes to reduce the prevalence and their subsequent manifestations related to various NCDs among such ethnic populations of Northeast India. The dissemination of adequate nutrition-related knowledge and awareness at the community level could be helpful in reducing the future possibility of increased overweight-obesity prevalence and related consequences of mortalities and morbidities among other ethnic populations of India.

CONFLICTS OF INTEREST

The authors declare that they have no conflicts of interest.

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Book Review

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Crossing the Loange: Congo Pax Service and the Journey Home – A Book Review

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INTRODUCTION

John M. Janzen and Larry B. Graber spent two years from 1957 to 1959 as volunteers on Congo Inland Mission (CIM) stations in the Belgian Congo. This book recounts their adventures on several mission stations, their research into Chokwe (or Cokwe) history, religion, and music in the Kamayala area, and the three month trip they took by car from the Congo to Brussels, Belgium. They tell their story largely through the letters they wrote to their parents and hundreds of photographs of people and places. The title of the book refers to the Loange River that they crossed numerous times, a river that flows south to north through the heart of the territory served by the CIM missions.

It was no accident that these two young men at about age 20 served in the Belgian Congo. Both had grown up in Mennonite families--Graber in Oregon, Janzen in Kansas--and had filed for conscientious objector status when they became eligible for the draft. Once granted that status, they looked for a country in which to serve their two years of Selective Service through a program of the Mennonite Central Committee (MCC). Oddly enough, each of them had older sisters who were engaged to the first two MCC Pax men who had served under the Congo Inland Mission in that country. In the Foreward of the book Graber explains how they began discussing going to serve in the Belgian Congo. He writes:

> *John and I were school mates at Bethel College in Kansas. A tragic accident took the life of Larry Kaufman, my sister's fiancé, and left Fremont devastated at the loss of his close friend and work partner. That incident was the catalyst that started our conversations about seeking permission to go to the Congo to honor and continue their work, as well as to take some constructive action as affirmation of the sacrifices made by these young men. (p. 2)*

Both of the authors tried to write weekly letters to their parents on their trip, and their mothers dutifully preserved them. In the summer of 2014, they met to discuss ways that they could share their memories, and decided they could publish excerpts from their letters home as well as photographs. Graber writes in the Foreward:

> *The why and wherefore of this project needs to be addressed. I agree. One reason, of course, is that the only reason our children and grandchildren are alive today to read this, is because we managed to survive. That took a certain amount of cunning and an equal or greater amount of good luck. (p. 4)*

In essence, the book was written mainly for family and friends, but the letters and photos will be of interest to anyone who has had contact with missionaries in Congo or other African countries, and to those interested in the experiences of MCC volunteers overseas. The excerpts provide vivid accounts of the work these two volunteers performed on several mission stations as well as the interactions with the local population. The book can also be read as a coming of age text from the viewpoint of the actors.

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The letters begin upon their arrival in New York City to take a boat to the port of Matadi, in Congo. Once they arrived at Matadi, they were assisted by MCC personnel and missionaries to make their way to Kinshasa, then to Kikwit and several CIM stations, and finally, to Kamayala where they spend most of their two years. That area of Congo near the border with Angola is populated mainly by Chokwe and Lunda peoples, cultural cousins in a way, with Chokwe as the majority group. Graber and Janzen studied Kituba, a trade language based on Kikongo. The languages they would hear in the Kahemba/Kamayala area were Kituba, Kichokwe, Kiruund (Lunda), French, and English.

This review focuses on two main themes: 1) the work the two volunteers performed for the missionaries and the institutions, the missionaries maintained; 2) the evolution of the terms and concepts they used in describing their work as they developed good relations with local people. The book also includes a separate chapter on Chokwe history, religion, and social structure written by Janzen, a text on Chokwe music written by Graber, and an account from their letters of their adventures in driving in a 1955 Citroen from Kamayala to East Africa, the Middle East, and on to Brussels, Belgium.

WORK ACTIVITIES

When Graber and Janzen arrived at the Kamayala mission station, they were given a house for themselves that had been built for missionaries complete with several bedrooms, a toilet, a kitchen sink, running water (cold), and a cook. One gets the impression that their role on the mission station was to do whatever the missionaries asked of them. Right away they began organizing supplies and spaces, and then began building furniture. Having grown up on farms, both Janzen and Graber were familiar with wood working and mechanics, so they were well prepared to build and repair all sorts of things. Their skills at building and repairing machinery and furniture freed up their supervisor in Kamayala (named John B. Jantzen) for other tasks. Their supervisor had been swamped with manual work, so when they arrived he just showed them around and suggested various projects they could undertake.

As Janzen writes in October 1957:

> *(after completing a particularly challenging repair) So it goes. We do odds and ends, fixing things that have been broken too long. John B.J. now spends most of the day in his office taking care of paper work. We're left to ourselves most of the time, and have almost 100 percent liberty on our projects. (p. 25)*

In January 1958, after four months, Graber writes:

> *John and I are in the process of making a magazine rack for Mrs. Diller's birthday. A modern thing with wrought iron legs, glass sides, operating on a pivot point so it can move from side to side. Also, John made a really nice desk that we are using in our house. We really have a lot of freedom to do the things we would like to do. We are free to design and build without supervision. The new Pax-boys at Mutena claim they are constantly being told what to do and how to do it. Often times we work for a whole week without Mr. Jantzen even coming down to see what we are doing. In order to keep things this way, we are doing the best possible work we can. (p. 30)*

The minimal amount of supervision allowed them both free time to pursue other interests: take bicycle trips to remote villages, visit with village elders, or listen to Chokwe music in villages. In January 1958 Janzen writes:

> *After three months of work we've become adept in the art of bossing so that now we don't spend more than two or three hours per day with our workmen. For instance, we built school desks – mass production. It's a simple matter to make them now, all I do is hand out the lumber and give the specifications. After that I'm free to do something else… The result of the workmen's newly found efficiency is more spare time. (p. 31)*

After 10 months of work, Janzen writes in July 1958:

> *As this is the dry season in Congo, every night the horizon is aglow from a number of plains burning. Hundreds of hunters flock to each big fire to cash in on the wonderful hunting opportunity. At first we too went to fires, but after the third one we decided it wasn't worth the effort. So to your concerned inquiry, we don't run off to every fire we hear of.*
>
> *Nevertheless, we could if we wanted to. We're not forced to do anything, really. Our freedom extends even to the category of our work, to the extent that we are given suggestions, and we proceed as we see fit.*
>
> *Now then, current projects include: preparing for conference at Mutena the last week in July. … Before the conference, though, we'll build about 100 school desks, about 15 school book cabinets, a gas pump shack, and do repair work on the guest house. (p. 62)*

The book also serves as a character study of the two authors who displayed their affection and respect for their parents, thanking them at times for their upbringing. As Janzen writes in August of 1958:

> *I don't feel right unless I tell you something about the week's work. Coming from the Louis Janzen family, I guess this is proper. Every day between 7:30 a.m. and 4:30 p.m. excepting noon I have a pervading sense of work pushing me – I have to get out and do what's to do. That trait from way back on the farm seems to have stuck. Although it didn't seem so virtuous then, and was painful at times,*

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I, nevertheless, have you, father, to thank for it. (p. 66)

The way the two of them performed earned praise from their supervisor who writes a letter to their parents in September 1958:

Almost a year has sped by since the arrival of John and Larry here at Kamayala. All of us here have learned to appreciate the boys, and we shall surely miss them when the time comes for their departure. They have been a tremendous help to us here. Innumerable odd jobs have been performed by them which would have taken a very large part of my time had they not been here. (p. 69)

Eventually both Graber and Janzen moved from manual labor and supervision of building furniture to institutional support roles, with Janzen working in the local schools and Graber serving as a medical assistant to doctors and nurses. Then each of them was reassigned to another CIM mission: Janzen to Mukedi and Graber to Kandala, and then Nyanga. Graber spent time in Kandala to assist in building a church. Janzen was to supervise the construction of a new hospital. He writes in March 1959:

My destiny is settled, my fate has been sealed. The middle of next month I'll be moving to Mukedi, to finish the state-subsidized hospital being built there now by Larry Rempel. He's going home on furlough toward the end of May and hopes to get the shell done by then.

You clamor for day-to-day activities. Today I spent all day on building and organizing – revising the garage-book-storage-house-bookstore, into neat separate rooms in the same building. (p. 92)

Writing soon after his arrival in Nyanga in April 1959, Graber says:

My initiation to Nyanga was a good one. Hardly have time to breathe. 6 a.m. Thursday I began activities in the hospital. I filled medical prescriptions until about 7:30 …

There is a lot to learn from Jim Diller. He is a genius of a doctor and takes time to explain things to me as he works. He says I will be helping him with surgery. (p. 142).

The letters contain relatively few comments about the missionaries for whom they worked. One finds a several references to how much they learned from a few of them and some comments critical of certain individuals. The letters chosen feature adventures and major challenges; they provide few comments on times they may have been discouraged, lonely, or despondent. Given the freedom they were given to make their own schedules in their first 18 months, one can assume they enjoyed much of what occupied their attention.

As indicated earlier, the two volunteers drove a Citroen purchased in Kikwit from Congo to Belgium once they had completed their service. The book includes excerpts showing how meticulously they prepared for their trip, calculating all costs for supplies, food, and lodging before they requested permission from their parents and supervisor in the US to purchase a car and drive to Belgium rather than take a plane. Their letters include descriptions of challenges they faced on the road as well as accounts of the tourist sites they visited.

WRITING ABOUT LOCAL PEOPLE

One of the most interesting aspects of these letters is the way that they show the gradual evolution of their opinions of local people, the Congolese. The authors do not call them Congolese; they are almost always Africans, or sometimes natives, and occasionally, Chokwe. Of course both authors are acutely aware of how they initially wrote about the locals, and how that changed over time. Janzen writes in the Foreward:

Perhaps not surprisingly, the early letters radiate a colonialist outlook, namely that Africans in general, and Chokwe in particular, are "backward", "primitive", in need of the civilizing influence of more "advanced" peoples, to help them "progress," to move forward toward civilization. We are also struck by the judgmental tone in some of our letters, calling individuals or whole groups dirty or lazy. Since we were with a mission, the civilizing work was to be accompanied by evangelization of the heathen. (p. 5)

The terms and ideas of both Graber and Janzen in speaking of the local population do not originate with them, of course, but rather, reflects a discourse common in the 1950s in Kansas (and in the US) about Africa and Africans. Here are a few examples to consider:

Graber writes in October of 1957 not long after they arrived.

The place we are living is really tops. We have our own bedrooms, one very nice bathroom, cold shower, and running water, toilet, sink, etc. We have a nice living room and dining room combination. We have a kitchen, pantry and storage room. Also a nice front porch. You are undoubtedly surprised to hear of all these luxuries. Congo is not as backward as many people think, at least not for the white people. The natives live in bamboo huts with grass roofs. Many young children have no clothes. Looks like a breeding ground for disease. (p. 21)

Janzen writes in October of 1957, about events on a bicycle trip:

… deep in the interior of Africa civilization has made only meager inroads into the customs of the natives, and these, having been made, don't necessitate the giving up of practices of ancestral significance. It might happen in almost any village, and at any time of the year, these celebrations so characteristic of African culture. We happened to come across one early (4:30 a.m.) on this date. For several miles we had been hearing drums in the distance. Boom, boom, boom in fast almost machine-like rhythm. Our thoughts

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were wondering, was it a death, celebration tribal dance, we didn't know. Our six weeks stay in the Congo hadn't given us any light on such matters.

Suddenly we came upon the village. A witch doctor, with bells ringing, slinked off the road into the grass as we approached, going through his ritual filled, self-centered ceremony. Nearby, before one of the huts the dance was going on to the tune of weird chant-like music, in exact time to the beat of the drums. There, around the smoke of a smoldering fire, we saw, what to us had been limited to storybooks before this, the unadulterated dance of this backward culture. (p. 23)

In a similar vein, Janzen writes in December of 1957:

In the course of time the missionaries from Kamayala have set up schools and churches in the area, and although they are small, and few and far between, they present an influence on the people. But they've got such a long way to come, that even after having small schools in their midst they seem impossibly primitive. We saw village elders and chiefs sitting around a fire, smoking the common pipe, discussing their palavers and concerns, while their many wives took care of the work. Little children gazed at us as if we were gods or something, and many of them stark naked, fairly gaped at the sights before them. The people of the area are so lazy that it matters little to them if their children go to school, and if they do go, it matters little what they learn. (p. 28)

By May of the following year (1958) the tone has changed. Graber writes:

(On a bike trip) Our hut for the night has red dirt walls and floors, a beautiful grass roof. It is about 7 ft. wide, 15 ft. long and 10 ft. high in the center. It is cool and comfortable here. There is just enough room for our two cots and with two windows for ventilation; it should be pretty fair sleeping.

Not only does Congo have its beautiful scenery, but in its own mystical way, the people are also very beautiful. Their lives have a certain simplicity to them. Simple dress, food, huts. No concern about Sputnik, the recession, cost of living, etc. Things that do affect them they seem to take in stride. With no autos, no roads, no radios or TVs, no doctors or hospitals they seem strangely at ease. (p. 43)

In June of 1958 Janzen writes:

Our overseer here, Abele Shangangula, the kapita, as he's called, is building a new house. It's the first African permanent house on the station, but it's really going to be large. The dimensions are a whopping 36x24 feet, really something beside the small mud and grass bungalows most of the Africans live in.

... As in other things, the Africans are coming along in home construction too. This kapita is one of the most energetic fellows around. He can effectively boss dozens of workmen, keep track of their wages, hand out supplies and rations, and still have time to sit down for a conversation with whoever may come along. He's highly intelligent, speaks most of the native languages of this part of Congo, French, a good bit of English, and has intuition. (p. 57)

This same overseer was the key figure in assisting Janzen in his learning about Chokwe history, religion, and social organization. He took Janzen around to surrounding villages to interview elders about their knowledge of history and religion.

Accounts of two other activities demonstrate how much the ideas of the two volunteers shifted after a year or so. After being sent to another CIM mission station (Nyanga) in April of 1959, Graber writes in June:

As you know, I have been boarding with missionary families for the last two month and have been paying 50 francs a day for this privilege. Having made the complete rounds here at Nyanga I decided to try boarding out at an African's house. I asked a young fellow, a mechanic, if I could board at his house for one week. He accepted readily for the rate of 15 francs per day. "And what time so we eat tomorrow?" I asked. "Oh, seven o'clock."(p. 151)

When Graber showed up the next morning at 7:00 AM for breakfast, he was told: No, we eat at 7:00 in the evening. Sometimes we eat only once a day. A week later Graber writes:

Well, my little experiment of eating African style lasted a total of four days. To sum it up, I would say, It's the nuts!! They really tried their best to please me. One day I asked them if they ever ate meat with their musa. The next evening, next to my musa, was a very small helping of red-looking meat.

I stuck it out in the village as long as I could, but decided for reasons of personal welfare, I would be better to get back into the missionary routine. In the four days I ate in the village, I had six meals and lost a total of 8 pounds. What really convinced me to call a halt to the experiment was the morning I got up and was so dizzy I could hardly brush my teeth. (p. 155)

Janzen fared somewhat better in Mukedi station when he followed Graber's example in July, 1959. He writes:

... now it's 9:00 o'clock in the evening. I've been running around for the past 10 hours, and am waiting for the mail to come in tonight yet. This week I'm eating in an African household, trying to see just how they live. It's most inter-

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> *esting to see several dishes covered before oneself, wondering what will be inside – caterpillars, musa, grasshoppers, canned sardines, fruit salad, or palm nuts …tonight I had caterpillars, ate perhaps 30 of the juicy things with musa. Yet as terrible as this stuff tastes, it's satisfying. I haven't felt as filled all year as I feel this week. (p. 156)*

The second activity showing a shift in tone in both Graber and Janzen was the project each one pursued in their spare time. Janzen has a chapter in the book entitled *Aspects of the Chokwe Tribe,* a summary of the information he was able to glean from his interviews with village elders. As Janzen explained in a January (1959) letter:

> *I've also been working at the "culture of the Bachoke." On the latter project, field trips out to villages have been the most interesting. Abele, the overseer here, is invaluable and knows old chiefs and young sages in all the villages around that are of the "old school" and can tell of old days. The early religion, primarily, is my current focus. (p. 83)*

Thanks to the Kamayala overseer who took him around, Janzen learned about the Chokwe takeover of that area in the 19th century, about Chokwe concepts of the maintenance of *hamba* shrines venerating ancestors, about the use of *wanga* (sorcery), and about their social organization. He mentions that he would like the time and resources to pursue this type of research seriously at some point.

Graber wrote a separate chapter on the music of the Chokwe, complete with numerous lyrics in Kichokwe, Kituba, and English. As Graber says, "I chose to study the music of the Bachoke, because I love music, I love the stories music tells, I love the insights it gives one into a society or culture." (p. 127) He also provides context for some of the songs he presents.

This book provides detailed accounts from the viewpoint of young American men of life among the whites on the mission stations of the CIM in Congo before independence. They displayed great respect, resourcefulness, and responsibility in their work. The text and photos also portray the gradual appreciation they gained for local social and cultural practices despite the stereotypes they had absorbed at home. Their experiences served as windows to a new world for them both.

FULL DISCLOSURE

John Janzen and I have been friends and colleagues for several decades and remain in touch. I have never had any contact with Larry Graber. I taught in a secondary school (Nyanga) established on a CIM mission station from 1966-68 and thus know some of the missionaries with whom John and Larry worked. I conducted research in Katanga and Bandundu provinces on Chokwe knowledge and practices related to illness and treatment for a PhD in anthropology, including two years in the Kahemba and Kamayala area. I became fluent in Kichokwe and worked as an apprentice to Chokwe traditional healers.

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Observational Study

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Localised Communities and Mass Healing Practice: The Case of Guangxi, China

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ABSTRACT

Healing, as a way of maintaining health in human beings, has been derived primarily from social and cultural concepts and events. This article investigates what may be termed as 'mass healing practice' and the way in which this form of healing has been passed down through generations in Guangxi's local communities. It examines the environmental as well as social and cultural elements underlying the localised healthcare tradition and analyses how this form of mass healing practice continues to largely exist on its own in present day Guangxi. This article briefly compares mass healing practice with the practice of modern western medicine and traditional Chinese medicine in other social contexts, and presents the argument that mass healing practice and mass healing education developed in Guangxi's isolated local communities are more elaborately rooted in the social and cultural matrix of such communities relative to the other forms of healthcare practice. This is because indigenous mass healing practices and education in isolated communities are not only related to people's everyday life, but are also understood, in varying degrees, as community-wide social activities.

KEY WORDS: Guangxi; Mass healing; Knowledge transmission; Local communities.

Healing practice is a way of maintaining human health, "embedded in the cultural values and social framework"[1] of a community. Healing practice in this article does not include any form of non-medical healing activities, such as praying to a God, Gods or ancestors, but only implies various therapeutic methods employed to treat people's illness. It therefore constitutes a part of all healing efforts today which, as Unschuld described, "can be considered to be of medical significance."[2] The social and cultural constitution of healing practices can be directly seen from the mass healing practice and related education in some indigenous communities in the Guangxi Zhuang Autonomous Region in southern China. It has been seen that mass healing practices and education in these communities are not only related to people's everyday lives, but are also seen in varying degrees as a part of community-wide social activities.

Guangxi is a largely mountainous region in the far south of China bordering Vietnam. It is inhabited by large numbers of various state-recognised ethnic groups such as the Zhuang, the largest; Miao; Yao; and others. Many such local communities in Guangxi were historically isolated from other communities due to the mountainous nature of the region. While providing rich medicinal resources that are essential for mass healing activities, the mountainous conditions have also encouraged those communities to function as expanded families which, as we shall see, provide a strong social foundation for the development of community-oriented mass healing practice and community-based mass healing education. This article introduces the concept of mass healing practice in those communities and examines to what extent and in what ways the geographic circumstances and social and cultural traditions contribute to the transmission of this form of mass healing across the generations.

Mass healing, as referred to in this article, denotes the existence of healing knowledge among the general populace, which enables people to treat themselves in an easier and immediate fashion in their everyday lives. More specifically, as Ban Xiuwen, a scholar from the Guangxi College of Traditional Chinese Medicine, points out, in Guangxi, no matter where

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people got sick, whether in agricultural fields or at the foot of a mountain, they could be treated immediately, by ordinary people who were able to use their knowledge of different kinds of indigenous healing therapies.[3]

MASS HEALING PRACTICE IN GUANGXI

There is little doubt that the knowledge of such healing practices were accumulated through the life experience of local people over a long period of time. One of the earliest detailed records of such practices can be found in an account by the official, Zhou Qufei, who lived during the Southern Song period (1127-1279). Originally from eastern China, Zhou Qufei was posted as an imperial official to Guizhou (an area centred in present-day Guilin) and Qinzhou (an area centred in present-day Qinzhou city and its surrounding areas) in Guangxi from 1174 until 1189. After he had completed his official duties, Zhou Qufei wrote a book entitled *Lingwai daida* (By Way of Answers to Questions about the Region beyond the Passes), in order to inform his friends and people in his hometown about the far south. In this work, Zhou describes how the local people at the time in Guangxi used *tiaocaozi*, a type of bloodletting or needling technique, in conjunction with traditional medicines, to treat 'hot Zhang' (a serious form of malaria). As Zhou described it, this treatment proceeded through the following stages: 1) pressing a needle into a patient's lips and then stimulating the flow of blood by applying manual pressure; 2) wiping a patient's tongue with paper mulberry leaves; 3) releasing a large amount of blood by stabbing the blood-vessel at the back of a patient's ankles; and 4) giving the patient *qinghao* (sweet wormwood) to drink with water. Zhou concluded that the treatment was highly effective.[4] More recent accounts further highlight the continued indigenous mass healing tradition in Guangxi's local communities. Liu Xifan, who was posted at Guangxi during the 1930s, wrote a monograph study on the people of Guangxi entitled *Lingbiao jiman* (Records of the Barbarians of Lingnan). In this work, Liu writes of the high efficacy of indigenous medicines which local people used to treat injuries like falls and fractures, ulcers, and other miscellaneous illnesses that required surgical treatment.[5]

The continued existence and relevance of mass healing traditions in the post-1949 era can be demonstrated more explicitly through peoples life experience. The contemporary Guangxi scholar Meng Yuanyao, who was a native of Mashan County (in the central part of Guangxi), contended in an interview in 1999 that he not only knew an indigenous therapy which had an established history in Mashan County for treating flu and coughs but that he also used it on himself and his family members. According to Meng, the therapy was as follows: first, pulverise a piece of ginger and then place the pulverised ginger on a piece of sandpaper or a towel; secondly, heat the sandpaper or towel and, once the sandpaper or towel is warm, sprinkle it with rice wine; finally, place the heated sandpaper or towel on the patient's back. Coughing should cease the day after this particular therapy is applied.[6]

Also in 1999, I asked a Guangxi anthropologist, Pan Qixu, about a local practitioner, Long Yuqian, who had been well known because of his traditional healing practice, *yaoxian dianju* (point moxibustion therapy with medicinally-infused strings), a secret family therapy which supposedly used to be practised only by the members of his family over generations. Long Yuqian being the most recent carrier of this longstanding family tradition and his practice had drawn particular attention from medical professionals and also from a much broader section of the community. Long's formal medical training, the efficacy of his secret formula for infusing strings as well as his official background, which enabled him to travel more widely and to be followed by his patients from one place to another, might explain his renownedness; however, Pan said that *yaoxian dianju*, was not only unique to Long Yuqian's family, but was in fact practised in various rural communities throughout Guangxi. Pan informed me that he had actually witnessed this treatment being performed by elderly women in a number of places in Guangxi. Depending on which localities these women came from, they used different formulas for producing medicinally-infused strings and they chose different acupoints.

It seems reasonable to say now that *Yaoxian dianjiu* is a popular form of moxibustion therapy practised in Guangxi. This therapy is noted for its efficacy in freeing impediments, relieving pain, relieving itching, dispelling wind, diminishing inflammation, quickening the blood and dispersing swelling. It can also be used to treat illnesses in internal, external, gynaecological, paediatric, ophthalmologic and ear, nose and throat areas. A practitioner undertakes this particular form of treatment by lighting a medicinally infused string made of *zhuma* (ramie) and then lightly burning, as in quickly touching, specific acupoints on a patient's body. The selection of specific acupoints is dependent upon the kind of illness that the patient is diagnosed with.[7]

Pan had no detailed information on what medicines were used for infusing strings in different places and whether those healing formulas were secretly passed down through the generations in different families. However what is certain, as well as important to this investigation, is that *yaoxian dianju*, as observed by an anthropologist, has continued to be a form of mass healing practice in local communities in Guangxi right up to the present day.[8]

As suggested earlier, the mountainous terrain in Guangxi provides a wide array of traditional medicines. With the wide availability of such resources, local communities developed herbal therapies based on locally-grown medicines as an important form of mass healing practice. Meng Yuanyao contends, for example, that a popular herbal therapy for treating coughs and influenza in his native place in Mashan County is based on the herbal medicines which can be easily collected from nearby roadsides or hill slopes. Another contemporary Guangxi scholar Ling Shudong, who is a native of Jingxi County (in the far south-western corner of Guangxi), also points out that some popular herbal therapies for treating eye problems in his native

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place used herbal medicines which could be easily sourced from local areas, or even from local residents' courtyards (such medicines are used with pig livers or goat livers to make soup).[9]

The *Daxin County Gazetteer* provides yet another concrete example of the continued existence of mass healing knowledge in Guangxi in the post-1949 period. According to a report in this gazetteer, on 26 August 1983, a young woman in a rural area of Daxin County (in the southwest of Guangxi) fell into a deep hole and sustained injuries that required medical treatment. A young man from a local village who happened to be passing by, found the young woman and came to her assistance. The man reportedly collected various forms of medicines from the immediate area and used them to stop her wounds from bleeding. As a result, the woman did not bleed to death, but was later transferred to a hospital and successfully treated for her injuries.[10] This example demonstrates the popular nature of knowledge concerning the types of herbal medicines that could be used to handle medical emergencies in isolated areas, and it also shows, in a broader sense, that people in local communities possess a shared set of healing knowledge and skills.

The possession of such a shared set of healing knowledge and skills can be further illustrated by a statement in the *Wuxuan County Gazetteer* which claims that "most people in Wuxuan County (in the central part of Guangxi) have long been able to treat many of their own illnesses by using locally produced medicines."[11] The *Wuxuan County Gazetteer* further intimates that some people were and still are able to utilize more complex indigenous therapies to treat illnesses, such as *guasha* (scraping the patient's neck, chest or back), cupping, and *tangye xunzheng* (treating disease with fumes in the form of moxibustion or with steam generated by boiling medical herbs).[12]

MASS HEALING EDUCATION

There is little doubt, according to the above, that mass healing knowledge and practices have continued to exist in some local communities in the Guangxi region. How have such knowledge and practice been transmitted and disseminated in these local communities? The transmission of the knowledge of these practices can be seen as a process of what can be termed as "mass healing education", which is a particular form and method of transmitting indigenous healing knowledge and healing practices. In an interview, Meng Yuanyao said that many people in present-day Guangxi had learnt basic healing treatments by merely observing and conferring with members of the older generation. For instance, Meng himself learnt the indigenous treatment for coughs and influenza, discussed above, as well as a treatment for parotitis (mumps) in this way.[13]

With regards to the above example reported in the *Daxin County Gazetteer*, according to Meng Yuanyao, the nature of that event resulted in a follow-up investigation designed to ascertain the level of local healing knowledge in certain areas of Guangxi. This investigation revealed the existence of a tradition, whereby people who were old enough to participate in agricultural production were taught by elder members of the local community how to identify and apply locally available forms of medicines to treat specific injuries. Meng also mentioned that it is a common practice in his native place (i.e., Mashan County) for elder members of the local community to teach their younger co-workers how to recognize the different kinds of plants that grew in the local area, and to know which of these plants could be used to treat specific conditions and illnesses. This kind of teaching, Meng continued, was not conducted in a formal classroom situation, but in daily activities, such as when people were on their way to and from agricultural work. As these examples suggest, the continued existence of mass healing culture in Guangxi derives from a long history of testing and determining the medicinal properties of locally available medicines, as well as the continued practice of actively transmitting knowledge of those medicinal properties to members of the younger generation.[14]

In addition to the way in which members of local communities acquired a broad working knowledge of locally available forms of medicines and their uses from older members of the community, mass healing education of this kind has often been transmitted *via* the medium of indigenous rhymes. This point can be illustrated with reference to two rhymes that were published in the *Wuxuan County Gazetteer*. Both of these rhymes set out to explain how one can recognize the utility of certain forms of traditional medicines. According to the first rhyme, herbs that are sweet, bland, or relaxing to taste, contain no poison. Herbs that have a fragrant flavour will stop pain. Herbs that have a bitter taste will purge 'fire-evil' (internal heat) but must be used with care. Herbs that are acrid will clear away 'wetness-evil' (diseases caused by dampness) and herbs with a lubricant effect will discharge pus. As the rhyme concludes, if one grasps this basic formula, then one will be able to perform outstanding services to society. The second rhyme follows a similar pattern to the first but adds that herbs with a downy skin can be used to reduce swelling; herbs that are sour to the taste will clean the blood; and products such as ginger, sugar and *Fangfeng* (saposhniko *via* divaricate), can be used to treat dizziness, and to numb swellings of the tongue.[15]

In an article entitled "*Gudai Zhuangyi yaoshankao*" (An Examination of Ancient Zhuang Medicinal Meals), Guangxi scholar Huang Dongling cites two more extant indigenous healing rhymes. The author does not mention the place of origin for the rhymes she cites. Although, I have neither transcribed these rhymes in full nor followed their precise order (in order to avoid excessive repetition), they similarly illustrate that the intended purpose of indigenous healing rhymes is to popularize the medicinal properties and uses of various forms of traditional medicines. As the first rhyme explains, herbs that have an acrid taste can be used to activate vital energy, clean the blood and expel superficial evils, as well as to treat wounds, 'wind-wetness' (rheumatism) and scatter 'cold-evil' (chills). Herbs that have a sour taste can be used to treat excessive loss of life-essence (en-

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ergy) and excessive loss of bodily fluids, such as that caused by sweating. Herbs that have a numbing effect can be used to stop pain, as well as to treat carbuncles, snake bites, and to get rid of phlegm. Herbs with an astringent effect can be used to fight bacteria, to stop bleeding, to treat burns, and to reduce inflammation. Herbs with a salty taste can be used both to aid digestion and ease constipation, and also to ease glandular swellings. Herbs with a bland taste can be used to dispel 'wetness-evil', promote the flow of urine, calm the heart, and ensure a restful night's sleep. Last but not the least, the rhyme suggests that herbs with a sweet taste can be used not only to regulate stomach energy and nourish the body, but also to improve the taste of therapies that contain a wide variety of different herbs.[16]

The second rhyme quoted by Huang Dongling is somewhat different from the preceding examples, detailing the relationship between the external form of various plants and their medicinal functions. According to this rhyme, herbs with a downy skin can be used to dispel 'wind-evil' (ailments caused by wind-carried pathogens); herbs with a thick liquid sap can be used to draw out pus; herbs with hollow stems have a diuretic effect; herbs with prickles and burs can be used to reduce swelling; trailing plants and vines can be used to treat problems associated with the joints and with circulation; plants with well-balanced or symmetrically organised patterns of branches and leaves can be used to treat wounds and wind-wetness syndrome; and herbs with downy skin on both the leaves and stalks can be used to stop bleeding and treat burns. As this particular rhyme concludes, herbs with a square stem and white flowers possess a cold nature; and herbs with a round stem and red flowers generally have an acrid taste and possess a warm nature.[17]

Although, several similar kinds of rhymes were also used to promote the knowledge of traditional Chinese medicine in central China, the intended audiences for indigenous rhymes about traditional medicines and rhymes relating to the uses of traditional Chinese medicine were different. Simply stated, rhymes about traditional Chinese medicine were mostly directed towards students undertaking specialization in traditional Chinese medicine and experienced practitioners. The primary function of indigenous healing rhymes however, clearly was to transmit knowledge of local traditional medicines and healthcare practices to the broadest possible sector of the population.

To elaborate: specialist rhymes designed to aid the students and practitioners of traditional Chinese medicine became an important genre in late imperial China. Probably the most well-known rhyme concerning knowledge of traditional Chinese medicine is the *Yixue sanzijing* or the 'Three Character Medical Classic', which was written by Chen Xiuyuan (1753-1823) in 1804. In a brief introduction to this rhyme, Chen explains that he intended it to function as a guide for those people who had just started studying traditional Chinese medicine. Based on the 'Three Character Classic' (*Sanzijing*) that was used to teach young children how to remember the meanings and forms of Chinese characters when they started primary school, Chen wanted the rhyme to remind practitioners of traditional Chinese medicine of the basic fundamentals of the field.[18]

In 1996, Xia Lianbao and Liu Lili published an edited work entitled *Lidai zhongyi gejue quanbian* (The Complete Collection of Historical Rhymes about Traditional Chinese Medicine). The rhymes included in this collection were written during the Song, Ming and Qing dynasties, and the editors grouped them under headings such as 'diagnosis', 'materia medica', 'prescriptions', 'channel points', 'acupuncture' and 'therapy'. Chen Xiuyuan's 'Three Character Medical Classic' is also included in this collection. In their conclusion the editors argue that rhymes about traditional Chinese medicine were produced with an explicit purpose in mind. Apparently, there were so many available resources on traditional Chinese medicine that beginners shied away from learning about the subject, and even reputed medical practitioners who had a theoretical foundation in the subject expressed with regret that it was impossible to memorise all the available texts. Hence, rhymes about traditional Chinese medicine were designed to act as a learning tool for beginners and as a reference guide for more experienced practitioners.[19]

Thus, rhymes about traditional Chinese medicine cannot be viewed as general educational materials designed to broaden the medical knowledge of ordinary members of the Chinese population. In contrast, the kinds of indigenous healing rhymes that historically circulated in Guangxi's local communities were recited by ordinary people and have been actively passed on to members of the 'new generation' as an important component of their life-skills.

The preceding comments indicate that mass healing practice and mass healing education were and continue to be viewed as an integral component of everyday life for members of local indigenous communities in the Guangxi region. The value of mass healing practice and the transmission of the mass healing knowledge flows from the understanding that the acquisition of such knowledge comprises an essential life skill rather than a professional skill.

All this suggests that mass healing practice in Guangxi has been characterised largely by both its community-oriented healing activities and its community-based knowledge transmission. This understanding stems from the different social organization of those local non-Han communities *vis-à-vis* Han Chinese communities which were not geographically isolated and where traditional Chinese medicine and modern Western medicine were major healthcare resources. In the following part of this article, therefore, I will outline the general social and cultural framework that contributed to the development of mass healing practice and mass healing education amongst those indigenous communities in the Guangxi region.

THE SOCIAL AND CULTURAL FRAMEWORK FOR MASS HEALING PRACTICE IN GUANGXI

The distinguishing features of mass healing practice in the

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Guangxi region are twofold: it is not primarily restricted to specific sites, or rather, it has no recognised workplace and its practitioners (who are also healing educators) are not accorded with a distinct professional identity. Certain similarities may exist between mass healing practice and mass healing education developed in Guangxi and what is called the practice of "learning to heal"[20] in Europe for the early modern period in terms of the knowledge transmission and the role of healers in communities. One must realize however, that while significant changes took place in Western medicine during modern times, mass healing practice and education in Guangxi local communities have continued to function even to the present-day.

Let us now look at the contrast between mass healing practice in Guangxi and, on the one hand, modern Western medicine and, on the other, traditional Chinese medicine. This issue is complex and shall be dealt with only for the limited objective of this article. A seemingly major difference between modern Western and a traditional Chinese medical system exists in the form of practice. The former has become increasingly site-based, or rather clinic/hospital-based, since the early nineteenth century[21] and has been "progressively equipped with the latest diagnostic and therapeutic technologies" from the time of the early twentieth century.[22] Traditional Chinese medicine however, may be offered at multiple sites including traditional pharmacies, the homes of patients, or even the street stands of practitioners, with little equipment. This difference aside, both medical systems contain a central cohort of practitioners who are viewed, albeit to varying degrees, as possessing either a professional status or an occupational identity such as "doctor".

By 1500, European physicians could separate themselves from artisanal healers through university education. By the end of 19th century, shifting patterns of medical licensing and more vigorous state intervention into medical practice spurred the evolution, and Europeans were "successfully medicalised to the extent that physicians become their clear first choice as healers".[23] In modern times, traditional Chinese medicine is often seen as less 'professional' than its Western counterpart, but it remains the case that traditional Chinese medicine was developed as a quasi-specialised system with a specialised cohort of practitioners who came mostly from specific social groups. Historically speaking, practitioners of traditional Chinese medicine were, in a broad sense, either intellectuals, the latest carriers of a family tradition, or people who had served an apprenticeship with 'father-like' masters. In the post-1949 period, as a result of an upsurge of nationalistic sentiment among the Chinese Communist Party's leadership about China's own medical tradition and its achievements, and more specifically, following the development of the college-based traditional Chinese medical training, practitioners of traditional Chinese medicine came to be much more identified in professional terms than in earlier generations.

In contrast to those in modern Western and traditional Chinese medical systems, the mass healing practitioners in those local communities in Guangxi region are not recognised as possessing a professional status or an occupational identity. Instead, the perceived expertise of such practitioners is more associated with their age or maturity. The trust that local people place in healers in those communities in terms of mass healing practice is, to some extent, related to the acknowledged maturity or greater experience of older members of the community.

The different status ascribed to practitioners within the above mentioned medical systems owes much to the historical and cultural considerations. To summarize, in Western societies, the nineteenth-century pursuit of a highly scientific approach to whatever observations were made, contributed greatly to the current biomedical character of modern Western medicine. Consequentially, modern Western medical services primarily rely on a biomedically trained force of medical personnel, as well as the types of equipment that can be found in hospitals and clinics. The emergence of this biomedical form of medicine cannot be separated from the kinds of cultural, political and economic changes that have occurred in European and North American societies since the nineteenth century. As anthropologists have observed, "Biomedicine achieved its dominant position in the West and beyond with the emergence of industrial capitalism and with abundant assistance from the capitalist class whose interests it commonly serves".[24]

In a different manner, the status enjoyed by practitioners of traditional Chinese medicine, on the one hand, transformed in varying degrees from the identification of traditional Chinese medicine with orthodoxy and the ideological superiority of Confucianism. That is to say, since the Song Dynasty (960-1279), intellectuals who practised traditional Chinese medicine could gain legitimacy as 'Confucian doctors'. On the other hand, traditional Chinese medicine developed in a cultural environment where concepts of family, kinship, and clan, played a significant role in structuring societal relationships. This meant that the transmission of medical knowledge within the broader Han Chinese community was in general restricted in the sense that such knowledge was saved as "a highly individualistic art"[25] to only pass on to family members, or else to student-apprentices who were selected by 'father-like' masters.

In post-1949 China, the more recognised professional status of traditional Chinese medical practitioners resulted arguably from an increasing emphasis on Chinese economic and cultural self-reliance from the early 1950s onwards, which "began to impinge upon the early emphasis to learn everything from Soviet medical experience".[26] More importantly, during that period, the Chinese Communist Party's new interest in traditional Chinese medicine was further linked to the issue of ideological correctness.[27]

Mass healing practice in indigenous communities in Guangxi however evolved in a quite different manner from the systems of modern Western medicine and traditional Chinese medicine. According to Ling Shudong, knowledge of mass healing practice was promoted in local communities on the under-

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standing that, with agricultural and building skills, every member of the community should possess some healing knowledge. Most importantly, it was an aspect of communal village life.[28] This understanding reflected the traditional solidarity of village society, a solidarity that was based not simply on a shared system of spiritual beliefs, but also on a realistic approach towards matters of everyday survival. In effect, community involvement in agricultural production and other activities were promoted to advance the interests of the community as a whole. These communities are best described as operating in the form of a large expanded family, which is another way of saying that the individual family was not accorded the same historical importance in such communities as it was in the social foundations where modern Western medicines and traditional Chinese medicines were developed.

Although, some local communities in the Guangxi region often possessed a rich resource of traditional medicines, they were historically isolated from other communities due to the mountainous nature of the region. A combination of geographical and cultural conditions thus encouraged these local communities to function as large family-style communities, in which the interests of the community as a whole took priority over the interests of the individual in certain respects.

The importance of the characteristically community-style approach of those local communities is highlighted in an interview that I conducted with a senior research fellow at the Guangxi Museum, Zheng Chaoxiong, in 1999. During this interview, Zheng told me about the fieldwork research he had undertaken in a mountainous village during 1998. As Zheng explained, this village has a particular tradition: after a woman has given birth to two children, she requests the acting headman and headwoman of the village to give her three herbs. These medicinal herbs act as a contraceptive, and prevent further pregnancies. Members of the village maintained that, flowing from a long history of limited land and food resources, they had adopted this particular practice in order to maintain a viable balance between the rate of births and deaths in the village.

Traditionally, only two people—the headman and the headwoman of the village—knew the exact identity of these three herbs. Shortly before his or her death, the headman would reveal the identity of these herbs to the new headman, as would the old headwoman to the new headwoman. In circumstances where a village head died suddenly, the surviving head would disclose the identity of the three herbs to the newly elected headman or woman. The reason for electing two village heads was to ensure that information about these particular forms of medicinal herbs could be passed onto the next generation, with the practice of electing two heads being referred to as 'double insurance.'

Apparently, other members of the village have never tried to ascertain the identity of these three locally produced forms of medicinal herbs. The complicity of village members in keeping the identity of these herbs a secret can be attributed to concerns over what might happen if such information became generally available. The villagers were reputedly afraid that if the identity of such locally produced forms of medicinal herbs were disclosed to the outside world, then the wild resources or natural availability of these herbs to members of the village would be threatened. As a consequence, during the 1980s, the members of the village refused the government's request for information about these herbs.

In short, the reluctance of village members to disclose the precise identity of these three locally produced forms of traditional medicines stemmed from a concern to protect the interests of the entire village community.[29] In a second meeting with Zheng Chaoxiong in January 2012 he re-confirmed the above information which he had provided to me in 1999. Hence, although this particular example may appear to contradict my preceding argument concerning the popularization of knowledge about traditional medicines and their uses in communities, it indicates that the identity of these three herbs was kept a secret for the explicit purpose of guaranteeing rather than limiting the general well-being of all village members. In other words, the practice of limiting access to information about the three herbs in question was not intended to limit the number of local consumers, rather to guarantee the most effective use within the specific village community.

THE COMMUNITY BASIS OF MASS HEALING PRACTICE

It can be seen from the above that mass healing practice in Guangxi developed within a social and cultural framework that, in a broad sense, resulted from "*the adaptation of human needs and capacities to.... diverse ecological circumstances*".[30] More specifically, this practice owed much to the isolated nature of local communities. These are communities in which solidarity was taken as the key link, and skills in producing food and undertaking certain healing treatments were deemed crucial to the knowledge of every member of the community. It can also be seen that the geographic circumstances of these communities, together with their social and cultural conditions moulded the way in which knowledge of the medicinal properties of locally grown plants and indigenous therapeutic treatments came to be transmitted across generations.

The community rootedness of mass healing practice can be also seen in the connection between health services and local geographic communities in modernised societies. Such modern communities, similar to Guangxi's local communities, can be defined as "group[s] of people with diverse characteristics who are linked by social ties, share common perspectives, and engage in joint action in geographical locations or settings"[31] and there can be no doubt that local communities in both Guangxi's isolated areas and modernised societies play an important role in promoting the coverage of healthcare services for the members in their communities. While identifying such a commonality, however, there is also an essential difference between these two types of communities in the promotion of healthcare.

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According to Galarneau, in the United States, community hospitals were established in the mid-1800s to care for local residents as well as to train physicians and nurses; and by the late 1960s and early 1970s, hundreds of local communities had established neighbourhood health centres in response to the healthcare needs of low-income persons as well as the desire for community governance. Today, community-based safety net providers, including community health centres and local non-profit hospitals, care for many uninsured persons.[32] Communities and healthcare services in a modernised society such as the United States; however, seem to be two separate entities which are mainly connected in administrative terms. The local geographic community in the US "has responsibility for the provision of healthcare to its members"[33] but healthcare is outsourced to professional healthcare "providers"[34] and the essential role of the community is to ensure that the healthcare providers, healthcare centres or hospitals efficiently serve local people. The result of this is that the transmission of healthcare knowledge or "substantial medical training", as Galarneau terms it, only "take(s) place in academic medical centers".[35]

In modernised societies like the US, communities provide supportive administrative conditions for healthcare institutions to offer their services, and the mechanisms at work are based upon administrative duties and medical professionalism rather than collective knowledge; this logically narrows the connection between the local community and healthcare service in general. In Guangxi however, what local communities provide are environmental and cultural conditions for mass healing practice to be created and for the knowledge of mass healing practice to be collectively owned, to nurture the connection between communities and healing practices. Additionally, we can see that, rather than being associated with the local community as both healers and transmitters of healing knowledge, healthcare centres and hospitals in modernised communities generally maintain only a one-way communication with the community —the undertaking of medical activities on individual patients. This further attenuated connection with the local community in general arguably reduces the communal nature of healthcare service in modernised communities. It can be said then that mass healing practice and mass healing education in Guangxi's local communities are much more socially and culturally embedded and elaborated.

There is little doubt that the development of healthcare services in modernised communities is primarily the result of increased specialization in modern societies. Hence, it is certainly true that, with economic reforms, the rapid modernization process in China over the past decades has also brought about the further development of health centres and hospitals in Guangxi's local communities. It must be noted however that whilst such modernization in healthcare service are welcomed by those communities, traditional mass healing practices are still existent in today's local communities in Guangxi.

My interview with Ling Shudong in January 2011 confirmed that in Jingxi County, localised healing therapies were still conducted by local community members. Ling particularly mentioned such cases as how bloodletting using hedgehogs' quills was conducted by local residents to treat tonsillitis in older patients and how locally grown herbs were used to treat bone injuries such as dislocation in old local villagers. According to Ling Shudong, hedgehogs' quills are used not only because they are hard and can be thus more easily exercised for bloodletting, but also because the *cold* nature of the hedgehog in traditional medical terms is believed to be able to bring down the level of the patients' internal heat which are considered the main reason causing tonsillitis.

Meng Yuanyao's story, as described below, shows on the other hand, that while developed in the social and cultural framework which is primarily shaped by local environmental conditions, certain forms of localised mass healing practice which do not require locally produced herbs could break through the geographic boundaries of their birthplaces and stay alive in a modern and commercialised urban area. Meng, as stated earlier, learnt certain indigenous healing therapies in his native place, Mashan County. After moving to Nanning, the capital city of Guangxi, however, Meng still prefers to use the indigenous therapy on himself and his family members for treating flu whenever possible, although he and his family members could easily gain access to a system of public doctors, public hospitals and public health insurance there. The personal health practices of Meng Yuanyao, in varying degrees, attests to not only the perceived efficacy, but also the continued popularity of indigenous mass healing practices in Guangxi today. Meng's story demonstrates not only how strong this local tradition is, but also, at a more specific level, how a well-rooted mass healing culture could shape individuals' healthcare behaviours and beliefs.

It can be argued in view of the above that, despite increased specialization in healthcare service, societal and cultural frameworks in those local communities still remain largely in place. All this results, arguably, from the fact that the geographical features of those local communities cannot be fundamentally altered by such modernizing changes as the construction of new healthcare centres and roadways. The local geographic environments have continued to provide growing conditions for a wide range of medicinal plants and, as Meng Yuanyao's case shows, the social impact of such environmental features has continued to shape daily living traditions of the local people.

All the above suggests that the expanded family structured environment of mass healing practice and education in Guangxi's local communities is rooted in social and cultural construction and the geographically isolated nature of these communities. It can also be argued that, along with distinguishing environmental features and people's strong community-centred concern for their localised healing traditions as well as the highly practical nature of these traditions in people's everyday life, various forms of mass healing practice could continue to exist, for the foreseeable future, even in the face of ever-increasing modernization and commercial development in today's China.

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Research Study

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Very High Prevalence of Thinness Among Rural Bengalee Preschool Children of Integrated Child Development Service (ICDS) Scheme of Sagar Island, South 24 Parganas, West Bengal, India

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ABSTRACT

Objective: To assess the prevalence of thinness among 3.0-5.5 years old preschool children of integrated child development services (ICDS) scheme of Sagar Block, South 24 Parganas, West Bengal, India.
Methods: This cross-sectional study was conducted among 656 preschool children (326 boys and 330 girls). Height (cm) and weight (kg) measurements were taken according to standard procedure. The body mass index (BMI) of the subjects were categorised according to the new international cut-off point for thinness proposed by Cole et al. Low BMI for age was defined as thinness and age sex specific cut off values of mild, moderate and severe grades of thinness as proposed by Cole et al.
Results: The age combined mean BMI were 13.48 (±0.92) kg/m^2 for boys and 13.30 (±1.00) kg/m^2 for girls. Sex combined mean BMI was 13.39 (±0.96) kg/m^2. The mean BMI showed a decreasing trend irrespective of sex up to age of 4.5 year. Over all (age combined) sex difference in mean BMI was observed (t=2.37; p<0.05) and age specific sex differences in mean BMI were also noticed at the age of 3.0 (t= 2.27; p<0.05) and 3.5 (t=3.02; p<0.05) years. The age combined prevalence of thinness among the boys and girls were 81.90% and 80.61%, respectively. Sex combined prevalence rate of thinness was 81.25%. The highest prevalence rates of thinness were found to be 96.83% in age group 5 years for boys and for girls it was 100% in age group of 5.5 years. The maximum numbers (41.86%) of normal nutritional status individuals were observed for boys at age group 3.5 years and for girls it was 34.00% at age 4 years.
Conclusion: The results of the present study clearly indicated that the nutritional status of these subjects is poor because of the existence of high-level of thinness. Findings of the present study would be very useful for the effective formulation of health and nutritional intervention programmes with the objective of reducing preschool undernutrition in terms of thinness. Therefore, appropriate effective measures should be under taken to reduce this high rate thinness.

KEY WORDS: Integrated child development service (ICDS); Undernutrition; Preschool children.

INTRODUCTION

Malnutrition is a widespread nutritional disorder in most of the developing countries. About 146 million children under five are underweight in the developing world and more than half of them live in South Asia including India. India has 49% underweight children, which share 39% of the world's underweight children. Numerically, 57 million children are underweight in India. Under nutrition during infancy and childhood substantially raises vulnerability to infection and

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disease and increases the risk of premature death. Among children in developing countries, malnutrition is an important factor contributing to illness and death.[1] Growth during childhood is widely used to assess adequate health, nutrition and development of children, and to estimate overall nutritional status as well as the health status of a population. Early childhood malnutrition is a serious public health problem in India including West Bengal. The nutrient requirement of an individual is largely determined by age, gender and body weight. Body weights and heights of children reflect their state of health, nutrition, rate of growth and weight and height of adults represent what can be attained by an individual with normal growth.[2]

Malnutrition during childhood can also affect growth potential and the risk of morbidity and mortality in later years of life.[1] Therefore, growth during childhood is widely used to assess adequate health, nutrition and development of children, and to estimate overall nutritional status as well as the health status of a population. Undernutrition can be considered as the most important cause of death in this age group in developing countries including India, where high rates of under-five morbidity and mortality are present. Seven out of ten childhood deaths in India are due to respiratory infections diarrhoea and malnutrition.[3]

Malnutrition is a pathological state resulting from a relative or absolute deficiency or excess of one or more essential nutrients.[4] Thus, the term "malnutrition" refers to undernutrition, over nutrition, specific nutrient deficiencies or imbalance.[4] Undernutrition can be divided into protein-energy malnutrition and micronutrient deficiencies.

Jacquemont et al[5] showed that reciprocal duplication in a part of chromosome 16 is associated with being underweight. They characterized about 140 duplication carriers who showed significantly reduced postnatal weight and BMI.

The assessment of nutritional status of population has attracted the attention of not only the nutritionists and other biological scientists, but also the economists and other social scientists with a view to understanding the health and socio-economic status of the population.[6] Due to its simplicity and low cost, anthropometric evaluation give, further, a simple and a reliable estimation of under nutrition prevalence.[7] Nutrition is concerned with social, economic, cultural and psychological implication of food and eating. Poor nutrition as evidenced by poor growth and small stature could affect development, intellectual performance and intellectual achievement.[8] Nutrition security is about an access to all people at all times to sustain a healthy and active life. Poor nutrition of children do not only affects the cognitive development of children but also likely to reduce the work capacity in future.[9] Body mass index (BMI) has been widely used for assessing nutritional status of adults and thinness in adolescents and more recently in children aged 0-5 years.[10]

The integrated child development services (ICDS) scheme is the largest national programme in the world for promotion of mother and child health and child development. It was launched on 2nd October, 1975. The ICDS is the symbol of India's commitment to her children. The beneficiaries of ICDS scheme include preschool children, pregnant and lactating mothers, and other women in the age group 15-44 years. The package of services provided by the ICDS scheme includes a) immunization, b) supplementary nutrition, c) health check-up, d) referral services, e) preschool non-formal education and also f) nutrition and health information. The scheme's services are provided through workers called "*Anganwadi workers*" at village "*Anganwadi*" centres.[11]

To evaluate the importance of the said service scheme programme, there is an urgent need to evaluate the nutritional status of children at ICDS centres to conclude whether they have low rates of thinness. Low rate of thinness would imply that the supplementary nutrition being administered to the children is helpful in dropping the rates of thinness undernutrition.

The aim of the present research was to evaluate the different grades of thinness among 3-5 year old ethnic Bengalee preschool (ICDS) children of Sagar Block, in the Sunderbans area of South 24 Parganas, West Bengal, India. We utilized age and sex specific international[12] cut off values based on body mass index (BMI) for thinness. The uniqueness of our study was that, hitherto, to the best of our knowledge, no previous study has been undertaken which has evaluated the prevalence of thinness among preschool children of this region.

MATERIALS AND METHODS

The Settings

This present cross-sectional study was undertaken at 28 ICDS centres at Sagar Block of South 24 Parganas District, West Bengal, India. The study area is situated at Gangasagar, Sundarban area of Kakdwip Subdivision. This is located at approximately 130 km far away from Kolkata, the provincial capital of West Bengal. Total areas of Sagar Island are 194.60 miles (504 km^2) and it has the population of 2,06,890 according to 2011 census. This block has a population density of 1063.155 (410.49 per km^2) per square mile. Growth rate is 20.38% during 2001-2011 but decadal growth rate of South 24 Parganas is 20.89% where this block decadal growth rate is 17.84%. The area is remote and mostly inhabited by Hindu. All preschool children (3-5 years old) living in Sagar Block are enrolled at these centres. The data was collected in several phases during November 2015 to January 2017. To the best of our knowledge, hitherto, there are no previous published investigations dealing with thinness among pre-school children from Sunderban area of West Bengal, India. This is the uniqueness of our study.

The Study Sample

The subjects were randomly selected from 28 ICDS centres of

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Sagar Island, West Bengal, India

DS2 Gram Panchayat of Sagar block, South Parganas district, West Bengal, India. A total number of 656 children (boys=326; girls=330) aged 3-5 years were measured. The distribution of the children is presented in Table 1. Ages of the children were ascertained from the *"Anganwadi"* registers, immunization cards and also subsequently confirmed by parents of the children. For analysis, age was grouped into 6 months intervals. Formal ethical and administrative approvals were obtained from Vidyasagar University as well as ICDS authorities prior to the commencement of the study.

Anthropometric Measurements

Anthropometric measurements of height (cm) and weight (kg) of each subject were made by one investigator (SPG) using Martin's anthropometer and standard spring balance weighing machine respectively, according to standard techniques.[13] Height (cm) and weight (kg) of the subjects were measured to the nearest 0.1 cm. and 100 g, respectively.

Statistical Analysis

The data were analysed using SPSS (Version 16.00) and MS Excel software. Sex differences (age-specific) were determined using Student's *t*-test. One-way ANOVA (Scheffe's procedure) analyses was undertaken to test for age variations of these variables.

Evaluation of Nutritional Status

There are several parameters to assess the nutritional status among the preschool children. Universally accepted age and sex specific international[11] cut off values of BMI (Table 2). This table shows age and sex specific cut off values of mild, moderate and severe grades of thinness as described by Cole et al.[12]

BMI was computed following the internationally accepted standards formula,[14] which is: BMI=Weight (in kg)/[Height (in m)]^2 and the unit is kg/m^2.

RESULTS

Table 3 presents the anthropometric characteristics of the studied children. It was found that age combined mean height for boys and girls were 99.29 (3.67) cm and 98.48 (3.50) cm respectively. It was also found that there was a significant increase

Table 1: Age and Sex Distribution of the Subjects.

Age in Years	Number of Boys	Number of Girls	Total (Sex combined)
3.0	76	64	140
3.5	43	56	99
4.0	57	50	107
4.5	46	60	106
5.0	63	64	127
5.5	41	36	77
Total (Age combined)	326	330	656

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Table 2: International Cut off Point for BMI (kg/m²) of Thinness Grade, I, II, and III for the Ages 3.0-5.5 Years.[12]

Age in years	Boy's Thinness			Girl's Thinness		
	Grade-III	Grade-II	Grade-I	Grade-III	Grade-II	Grade-I
3.0	13.09	13.79	14.74	12.98	13.60	14.47
3.5	12.97	13.64	14.57	12.86	13.47	14.32
4.0	12.86	13.52	14.43	12.73	13.34	14.19
4.5	12.76	13.41	14.31	12.61	13.21	14.06
5.0	12.66	13.31	14.21	12.50	13.09	13.94
5.5	12.58	13.22	14.13	12.40	12.99	13.86

Table 3: Anthropometric Characteristics of the Subjects.

Age group in years	Height (cm)			Weight (kg)			BMI (kg/m²)			
	Boys: Mean (SD)	Girls: Mean (SD)	Sex Combined: Mean (SD)	Boys: Mean (SD)	Girls: Mean (SD)	Sex Combined: Mean (SD)	Boys: Mean (SD)	Girls: Mean (SD)	*t*-value	Sex Combined: Mean (SD)
3.0	89.77 (3.60)	90.00 (4.04)	89.89 (3.82)	11.51 (1.08)	11.26 (1.15)	11.39 (1.12)	14.28 (0.99)	13.90 (1.00)	2.27*	**14.09 (1.00)**
3.5	94.70 (3.63)	94.09 (2.69)	94.40 (3.16)	12.69 (1.38)	11.91 (1.15)	12.30 (1.27)	14.13 (1.08)	13.45 (1.12)	3.02*	**13.79 (1.10)**
4.0	97.69 (3.47)	96.89 (3.65)	97.29 (3.56)	12.65 (1.48)	12.58 (1.42)	12.62 (1.45)	13.23 (0.98)	13.42 (1.49)	-0.81	**13.33 (1.24)**
4.5	100.89 (3.22)	100.06 (4.02)	100.48 (3.62)	13.22 (1.41)	12.90 (1.36)	13.06 (1.39)	12.95 (0.88)	12.89 (1.23)	0.29	**12.92 (1.06)**
5.0	104.53 (3.77)	103.78 (2.95)	104.16 (3.36)	14.40 (0.94)	14.23 (0.97)	14.32 (0.96)	13.19 (0.78)	13.20 (0.61)	-0.10	**13.20 (0.70)**
5.5	108.18 (4.34)	106.09 (3.62)	107.14 (3.98)	15.38 (1.88)	14.56 (0.99)	14.97 (1.44)	13.09 (0.82)	12.93 (0.54)	1.03*	**13.01 (0.68)**
Age combined	99.29 (3.67)	98.48 (3.50)	98.89 (3.58)	13.31 (1.36)	12.91 (1.17)	13.11 (1.27)	13.48 (0.92)	13.30 (1.00)	2.37	**13.39 (0.96)**
F= values	191.34***	156.09**	344.67***	59.45**	62.00**	116.45***	21.76**	7.43*		**24.38*** **

Standard deviations are presented within the parentheses.
Significant level: *=p<0.05, **=p<0.01, ***=p<0.001

in mean height with increasing age (boys: F=191.34, p<0.001; girls: F=156.09, p<0.001). The age combined mean weight for boys and girls were 13.31 (1.36) kg and 12.91 (1.17) kg respectively. Mean weight also increased significantly with age (boys: F=59.45, p<0.001; girls: F=62.00, p<0.001). The age combined mean BMI (kg/m²) were 13.48 (SD=0.92) for boys and 13.30 (sd=1.00) for girls. The sex combined mean BMI (kg/m²) was 13.39 (0.96). Mean BMI kg/m² decreased with age up in both sexes, except at age of 5 year (means, boys=13.19; SD=0.78) and 13.20 (SD=0.61). Over all (age combined) sex difference in mean BMI was observed (t=2.37; p<0.05) and age specific sex differences in mean BMI were also noticed at the age of 3.0 (t=2.27; p<0.05) and 3.5 (t=3.02; p<0.05) years. Overall and sex specific age variations in mean BMI were also observed (boys: F=21.76, p<0.001; girls: F=7.43, p<0.05 Sex combined: F=24.38, p<0.001).

Table 4 shows the prevalence of thinness among the subjects. The age combined prevalence of thinness among the boys and girls were 81.90% and 80.61%, respectively (Figures 1 and 2). Age and sex combined prevalence of thinness was 81.25%. The highest prevalence rates of thinness were found in the age group of 5 years for boys (96.83%) and in the age group of 5.5 years among girls (100%).

DISCUSSION

It is well established that undernutrition among the children is a serious global public health problem, especially in developing countries.[15] The underfed still outnumbered in the developing world among Asian, African and Latin American populations.[16] In spite of the economic development in that region, undernutrition remains an important public problem in many Asian countries.[17] Previously, estimation of the level of under nutrition for preschool children based on BMI was not suitably possible due to the lack of appropriate cut-off points. Cole and others[12] have developed suitable thinness cut-off points for children aged 2-18 years. Based on this cut-off point, our study showed that the prevalence of thinness among the Bengali preschool ICDS children was 83.54% which was slightly lower than the ICDS children (85.20%) of Bali-Gram Panchayat, Hooghly, Arambag, West Bengal, India.[18] However, it was much higher than the prevalence of thinness among ICDS children of Chapra (50.70%),[19] Barui ICDS children (65.30%) of Purulia, West Bengal,[20] ICDS

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Table 4: Prevalence (%) of Thinness among the Subjects.

Age in years	Thinness (Boys)					Thinness (Girls)					Thinness Sex combined
	Grade-I	Grade-II	Grade-III	Overall	Normal	Grade-I	Grade-II	Grade-III	Overall	Normal	
3.0	8 (10.53)	18 (23.68)	27 (35.53)	53 (69.74)	23 (30.26)	11 (17.19)	14 (21.88)	20 (31.25)	45 (70.31)	19 (29.69)	**98 (70.00)**
3.5	7 (16.28)	10 (23.26)	8 (18.60)	25 (58.14)	18 (41.86)	18 (32.14)	10 (17.86)	17 (30.36)	45 (80.36)	11 (19.64)	**70 (70.71)**
4.0	17 (29.82)	22 (38.60)	12 (21.05)	51 (89.47)	6 (10.53)	17 (34.00)	3 (6.00)	13 (26.00)	33 (66.00)	17 (34.00)	**84 (78.50)**
4.5	17 (36.96)	15 (32.61)	11 (23.91)	43 (93.48)	3 (6.52)	23 (38.33)	10 (16.67)	16 (26.67)	49 (81.67)	11 (18.33)	**92 (86.79)**
5.0	14 (22.22)	18 (28.57)	29 (46.03)	61 (96.83)	2 (3.17)	10 (15.63)	20 (31.25)	28 (43.75)	58 (90.63)	6 (9.38)	**119 (93.70)**
5.5	10 (24.39)	17 (41.46)	7 (17.07)	34 (82.93)	7 (17.07)	5 (13.89)	17 (47.22)	14 (38.89)	36 (100.00)	0 (0.00)	**70 (90.91)**
Age combined	**73 (22.39)**	**100 (30.67)**	**94 (28.83)**	**267 (81.90)**	**59 (18.10)**	**84 (25.45)**	**74 (22.42)**	**108 (32.73)**	**266 (80.61)**	**64 (19.39)**	**533 (81.25)**

children of Vadodara (63.00%), Gujarat[21], ICDS children of Patashpur, East Medinipur, West Bengal (59.10%)[22] and Santal children of Purulia, West Bengal (56.40%).[23] All these discussed (Table 5; Figure 3) studies were conducted in agricultural based rural areas. The prevalence of thinness among them was only 4.2%. Thus, the nutritional condition of these Indian children is worse than preschool children of Gaza Strip.[24] Therefore, the results of the present study clearly indicated that, irrespective of sex, very high rates of thinness was observed indicating an unsatisfactory nutritional situation.

CONCLUSION AND RECOMMENDATIONS

Although, one of the limitations of our study was a relatively small sample size, we can conclude that Bengalee preschool children of both sexes in Sagar Block, Sunderbans, South 24 Parganas, West Bengal, India, were found to be under serious nutritional stress. A recent study[25] from a rural area of Karnataka has highlighted the importance of studying thinness to evaluate nutritional status among ICDS children. Our paper reports new findings on the prevalence of thinness among preschool

Figure 1: Prevalence of Thinness (%) Among Boys.

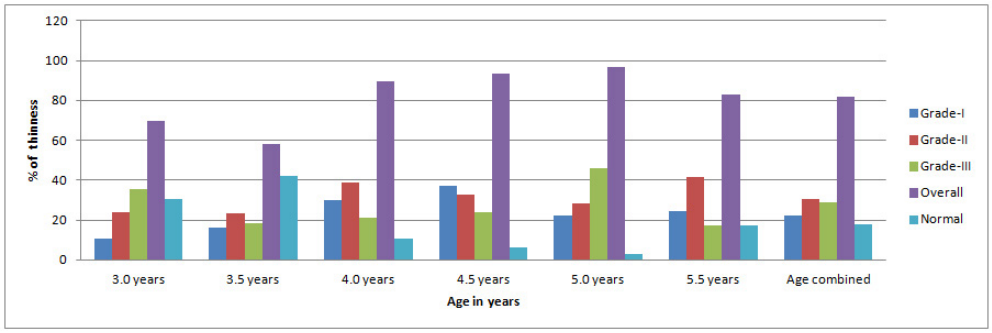

Figure 2: Prevalence of Thinness (%) Among Girls.

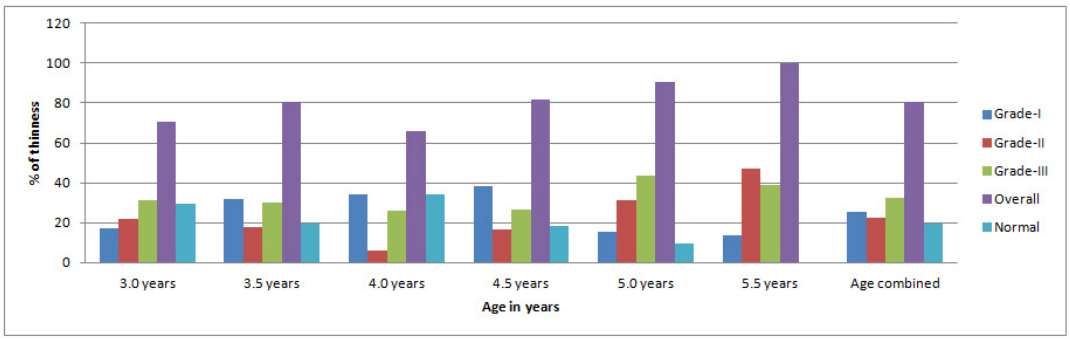

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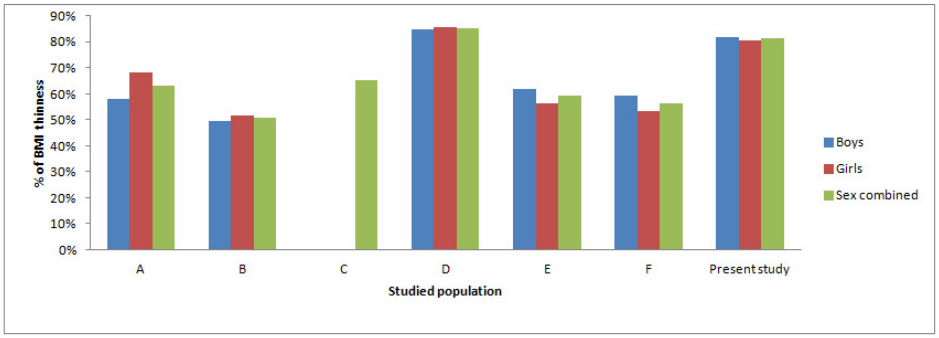
Table 5: Prevalence of Thinness among Preschool Children: A Comparison with Other Studies.

Studied population	Prevalence of Thinness			
	Boys (%)	Girls (%)	Overall (%)	Studied By
ICDS children of Vadodara, Gujrat, India.	58.00	68.20	63.00	Bhalani and Kotecha[21]
ICDS children of Chapra, Nadia, West Bengal, India.	49.68	51.57	50.70	Biswas et al[19]
Barui scheduled cast children of Purulia West Bengal, India.	-	-	65.30	Das et al[20]
ICDS children of Bali-Gram Panchayat, Hooghly, Arambag, West Bengal, India.	84.80	85.60	85.20	Mandal et al[18]
ICDS children of Patashpur, East Medinipur, West Bengal, India.	61.80	56.50	59.10	Mandal et al[22]
Santal children from Purulia, West Bengal, India	59.50	53.30	56.40	Das et al[23]
ICDS children from Sagar Block, South 24 Parganas, West Bengal, India.	81.90	80.61	81.25	Present Study

Figure 3: Comparison in Prevalence (%) of Thinness with other Studies.



A= ICDS children of Vadodara, Gujrat, India.[21]
B= ICDS children of Chapra, Nadia, West Bengal, India.[19]
C= Barui scheduled cast children of Purulia West Bengal, India.[20]
D= ICDS children of Bali-Gram Panchayat, Hooghly, Arambag, West Bengal, India.[18]
E= ICDS children of Patashpur, East Medinipur, West Bengal, India.[22]
F= Santal children from Purulia, West Bengal, India.[23]
Present study=ICDS pre-school children from Sagar Block, Sunderbans, South 24 Parganas, West Bengal, India.

children of Sunderbans. These findings are very useful not only as a source of database but they can also be utilized for comparisons with other regional, national and international studies. Herein lies the uility of our investigation. Thus, in the Indian context, we suggest that similar studies be undertaken amongst other ethnic preschool children, especially in rural areas, to determine the prevalence of thinness using these new international cut-off points. Such studies would help us to generate new data which can be used for comparison with the prevalence of thinness in the regional, national and global context. Better health and nutritional intervention policies can be formulated based on the findings of these investigations.

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COMPETING INTEREST

The authors declared that they have no conflict of interest with respect to the research, and publication of this article.

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