WORLD HEALTH & POPULATION

www.worldhealthandpopulation.com

VOLUME 11 • NUMBER 2 • 2009

Deliveries Among Adolescent Mothers in Rural Bangladesh: Who Provides Assistance?

Factors Influencing Mothers' Role in Convulsion Treatment among Under-Five Children in Ibadan, Nigeria

Social Stigma and Quality of Life among Rural-to-Urban Migrants in China: A Comparison with Their Rural Counterparts

Human Nomenclature: From Race to Racism

UNC HEALTH CARE Fonds A LONGWOODS PUBLICATION

WORLD HEALTH & POPULATION

IN THIS ISSUE

WORLD HEALTH & POPULATION

Founded and edited by members of the Department of Health Policy and Administration, School of Public Health, University of North Carolina at Chapel Hill.

How To Reach The Editors And Publisher
Telephone: 416-864-9667 Fax: 416-368-4443

Addresses
All mail should go to: Longwoods Publishing Corporation, 260 Adelaide Street East, No. 8, Toronto, Ontario M5A 1N1, Canada.

For deliveries to our studio: 54 Berkeley St., Suite 305, Toronto, Ontario M5A 2W4, Canada

Subscriptions
Individual subscription rates for one year are [C] $40 for online only and [C] $200 for print + online.

For individual subscriptions contact Barbara Marshall at telephone 416-864-9667, ext. 100 or by e-mail at bmarshall@longwoods.com.

Institutional subscription rates are [C] $240 for online only and [C] $340 for print + online.

For institutional subscriptions, please contact Rebecca Hart at telephone 416-864-9667, ext. 105 or by e-mail at rhart@longwoods.com.

Subscriptions must be paid in advance. An additional 6% Goods and Services Tax (GST) is payable on all Canadian transactions. Rates outside of Canada are in US dollars. Our GST number is R138513668.

Subscribe Online
Go to www.worldhealthandpopulation.com and click on "Subscribe now."

Free Online Access for Developing Countries
The online version of the journal *World Health & Population* is available for free to individuals and organizations from developing nations whose mission involves education and / or health. For more information and to see if your country is eligible go to http://www.longwoods.com/countries.

Reprints/single Issues
Single issues are available at $25. Includes shipping and handling. Reprints can be ordered in lots of 100 or more. For reprint information call Barbara Marshall at 416-864-9667 or fax 416-368-4443, or e-mail to bmarshall@longwoods.com.

Return undeliverable Canadian addresses to: Circulation Department, Longwoods Publishing Corporation, 260 Adelaide Street East, No. 8, Toronto, Ontario M5A 1N1, Canada

Editorial
To submit material or talk to our editors please contact Dianne Foster-Kent at 416-864-9667, ext. 106 or by e-mail at dkent@longwoods.com. Author guidelines are available online at http://www.longwoods.com/pages.php?pageid=5&cat=249

Advertising
For advertising rates and inquiries, please contact Susan Hale at 416-864-9667, ext. 104 or by e-mail at shale@longwoods.com.

Publishing
To discuss supplements or other publishing issues contact Anton Hart at 416-864-9667, ext. 109 or by e-mail at ahart@longwoods.com.

World Health & Population is published four times per year by Longwoods Publishing Corp., 260 Adelaide St. East, No. 8, Toronto, ON M5A 1N1, Canada. Information contained in this publication has been compiled from sources believed to be reliable. While every effort has been made to ensure accuracy and completeness, these are not guaranteed. The views and opinions expressed are those of the individual contributors and do not necessarily represent an official opinion of *World Health & Population* or Longwoods Publishing Corporation. Readers are urged to consult their professional advisers prior to acting on the basis of material in this journal.

World Health & Population is indexed in the following: CAB Abstracts, Global Health, MEDLINE/Pubmed, Ulrich's (CSA), Index Copernicus and Scopus.

Editor in Chief
John E. Paul, PhD
University of North Carolina at Chapel Hill

Associate Editors
Christopher Shea, MA, PhD (c)
University of North Carolina at Chapel Hill

Amir A. Khaliq, PhD
University of Oklahoma Health Sciences Center

Michel Landry, PhD
University of Toronto

Lutchmie Narine, PhD
Syracuse University, Syracuse, NY

Editorial Advisory Board
Peggy Leatt, PhD (Chair Editorial Advisory Board)
Professor and Chair, Department of Health Policy and Administration
Associate Dean for Academic Affairs, School of Public Health, University of North Carolina at Chapel Hill, Chapel Hill, NC

Sagar C. Jain, PhD
Founding Editor-in-Chief, Journal of Health and Population in Developing Countries, Professor Emeritus, Department of Health Policy and Administration, School of Public Health, University of North Carolina at Chapel Hill, Chapel Hill, NC

Karen B. Allen, MA, MSc, PhD
Regional Programme Planning Officer, UNICEF Eastern and Southern Africa Regional Office (ESARO), Nairobi, Kenya

François Béland, PhD
Professeur titulaire, Faculté de Médecine, Université de Montréal, Montreal, Quebec, Canada

Margaret Bentley, PhD
Associate Dean for Global Health, School of Public Health, University of North Carolina at Chapel Hill, Chapel Hill, NC

Adalsteinn Brown, DPhil
Assistant Professor, Department of Health Policy, Management, and Evaluation, University of Toronto, Toronto, Ontario, Canada

Francois Champagne, PhD
Professeur titulaire, Administration de la santé et GRIS, Université de Montréal, Montreal, Quebec, Canada

Wen Chen, PhD, MD
Professor of Health Economics, Associate Dean, School of Public Health, Fudan University, Shanghai, China

Jean-Louis Denis, PhD
Professeur titulaire, Faculté de Médecine, Université de Montréal, Montreal, Quebec, Canada

William H. Dow, PhD
Associate Professor of Health Economics, University of California, Berkeley, School of Public Health, Berkeley, California

Bruce J. Fried, PhD
Associate Professor and Chair, Global Health Committee, Department of Health Policy and Administration, University of North Carolina at Chapel Hill, Chapel Hill, NC

Daniel L. Goetz, MS
Senior Public Administration Specialist, International Development Group, RTI International, Research Triangle Park, NC

Dean M. Harris, JD
Clinical Associate Professor, Department of Health Policy and Administration, University of North Carolina at Chapel Hill, Chapel Hill, NC

Amir A. Khaliq, PhD
Assistant Professor, Health Administration & Policy, College of Public Health, The University of Oklahoma Health Sciences Center, Tulsa, Oklahoma

Ambika Krishnakumar, PhD
Associate Professor, College of Human Services and Health Professions, Syracuse University, Syracuse, NY

Sandra G. Leggat, PhD
School of Public Health, La Trobe University, Bundoora, Victoria, Australia

Lutchmie Narine, PhD
Associate Professor, Department of Health and Wellness, College of Human Ecology, Syracuse University

Bernardo Ramirez, MD, Vice President, INTECH, Celebration, Florida

Amal C. Sjaaf, MD, DrPH, Professor, Department of Health Policy and Administration, School of Public Health, University of Indonesia, Jakarta, Indonesia

Abdul Sattar Yoosuf, DrPH
Director, Sustainable Development and Healthy Environments, World Health Organization, South East Asian Regional Office (SEARO), New Delhi, India

David Zakus, BSc, MES, MSc, PhD
Director, Centre for International Health, Faculty of Medicine, University of Toronto
President, Global Health Education Consortium, Toronto, Ontario, Canada

Editorial Director
Dianne Foster-Kent
E-mail: dkent@longwoods.com

Managing Editor
Ania Bogacka
E-mail: abogacka@longwoods.com

Publisher
W. Anton Hart
E-mail: ahart@longwoods.com

Associate Publisher
Rebecca Hart
E-mail: rhart@longwoods.com

Associate Publisher/Administration
Barbara Marshall
E-mail: bmarshall@longwoods.com

Associate Publisher/Media
Susan Hale
E-mail: shale@longwoods.com

Associate Publisher/Services
Matthew Hart
E-mail: mhart@longwoods.com

Director, Design and Production
Yvonne Koo
E-mail: ykoo@longwoods.com

Graphic Designer, Design and Production
Jonathan Whitehead
E-mail: jwhitehead@longwoods.com

No liability for this journal's content shall be incurred by Longwoods Publishing Corporation, the editors, the editorial advisory board or any contributors.
ISSN No. 1718-3340

Publications Mail Agreement No. 40069375
© October 2009

From the Editor-in-Chief

This issue of *World Health & Population* presents papers that have been published online by *WHP* and are selected here as representative of recent contributions to the journal. The papers in this issue include research from South Asia, Africa and China, as well as an essay on the use and misuse of racial categorization in health research.

The first two articles have direct relationship to the Millennium Development Goals, the highly appropriate theme and focus for many papers in *WHP* over the last several years. In the first article, and relating to MDG5 targeting a 75% reduction in maternal mortality, Mosiur Rahman investigates characteristics surrounding deliveries by adolescent mothers in Bangladesh. Using the 2004 Bangladesh Demographic and Health Survey (DHS) data, the author reports that a stunning 93.6% of all adolescent deliveries occur outside healthcare facilities. Rahman describes a series of economic and social characteristics associated with home and improperly attended deliveries among girls 15 to 19 years of age, including education, antenatal care and knowledge of possible complications of pregnancy. Childbearing during adolescence is a concern everywhere in the world, reflecting both physical and emotional vulnerability. MDG5 would direct us towards the causes among women very young to be having children.

The second article, by Nwokocha and Awomoyi of the University of Ibadan, examines attitudes towards childhood seizure disorders ("convulsions") in Nigeria. Childhood seizures (normally febrile in etiology) are relatively common in North America and Western Europe but are rarely serious; they are nearly always followed up with medical care, thus ruling out potentially serious conditions and their treatment. In sub-Saharan Africa, however, convulsions are reported as a major cause of under-five mortality, and therefore should be of interest in relation to MDG4, which targets a two-thirds reduction in this category. For parents everywhere, a childhood seizure is a dramatic and highly concerning event. Parental response is conditioned by beliefs embedded in the socio-cultural system. The authors provide a robust and helpful theoretical framework for their research, which included both quantitative and qualitative data collection with 500 mothers in southwest Nigeria. The paper underlines the importance of empowering mothers to make healthcare decisions, even in the face of dramatic, culturally laden events such as childhood seizures.

The next article continues a series on rural–urban migration issues in China that have been published over the last few years in *WHP* by Li and his collaborators (see *WHP* 8:3, 9:4, 11:1). This time the authors describe research on stigma and quality of life (QOL), tackling the difficult issues of measuring (1) differential QOL between rural-to-urban migrants compared to rural-dwelling counterparts, (2) perceptions by both populations of social stigma and (3) the association between stigma and QOL. Using rigorously collected survey data and validated psychometric instruments (supported in part by the Fogarty International Center and the National Institute of Mental Health), the study supports the hypothesis that social stigma diminishes QOL. The authors conclude that actions recognizing the contributions of rural-to-urban migrants to China's current prosperity would improve their status and thus would constitute an important policy direction.

The final article, "Human Nomenclature: From Race to Racism," is an essay by Carlos Zubaran of the University of Western Sydney, Australia. The essay is prefaced by a helpful commentary by *WHP* Associate Editor Luchmie Narine. Both authors emphasize the importance of careful consideration of meaning (and oftentimes lack of validity) in the ubiquitous use of racial categories in social science and health services research. Researchers would be well served to consider the implications of groupings and potential stereotypes pointed out by Zubaran.

We hope that you find the papers in this issue interesting and valuable, and that you will also consult others recently released online at www.worldhealthandpopulation.com. *WHP* remains committed to its mission to provide a forum for researchers and policy makers worldwide to publish and disseminate health- and population-related research, and to encourage applied research and policy analysis from diverse global settings. Note also that *WHP* is indexed on MEDLINE and is accessible through PubMed. We look forward to continued enthusiastic submission of manuscripts for consideration, peer review and publication. Finally, the editors and publishers of *WHP* are always interested in any comments or suggestions you might have on the papers or the journal. Please feel free to write or email us.

John E. Paul, PhD
Editor-in-Chief, *World Health & Population*
paulj@email.unc.edu

WORLD HEALTH & POPULATION

Deliveries Among Adolescent Mothers in Rural Bangladesh: Who Provides Assistance?

Md. Mosiur Rahman, Department of Population Science and Human Resource
Development, University of Rajshahi, Rajshahi-6205, Bangladesh

Md. Mosiur Rahman, Lecturer, Department of Population Science and Human Resource
Development, University of Rajshahi, Rajshahi-6205, Bangladesh,
Email: swaponru_2000@yahoo.com

Abstract

Objectives: This paper sought to identify factors associated with modes of delivery assistance among adolescent mothers in rural Bangladesh.
Methodology: Bangladesh Demographic and Health Survey of 2004 data for the last 5 years (*N* = 867) were used. Univariate statistical analysis and multivariate logistic regression methods were employed in analyzing the data.
Results: We observed that almost all adolescent deliveries (93.6 %) took place at home, and most (80.1%) were assisted by untrained traditional birth attendants, relatives or neighbours. Only 8.8% were attended by medically trained persons. Main factors affecting delivery practices among adolescents were mass media exposure, parents' education, antenatal care received, type of toilet facilities and visits by family planning workers (FPW), wanted last child and told about pregnancy complications.
Conclusions: Results indicate several policy options to improve outcomes for adolescent mothers: (a) create awareness of appropriate behaviours during pregnancy, delivery and post-partum period, (b) ensure maternal healthcare centres are available, especially rurally, for antenatal care, expand and improve the quality of home births by trained providers and introduce post-partum visits, (c) increase the number of visits by family welfare visitors/family welfare assistants (FWV/FWA), and (d) emphasize adolescent education to make a lasting impact on the overall health of adolescent mothers.

Introduction

Safe motherhood programs have repeatedly called for delivery under the supervision of qualified health professionals in order to reduce the risk of infection and manage complications that may otherwise lead to death or serious illness of mother and neonate (Safe Motherhood 2001). One of the main problems in Bangladesh in achieving good reproductive health is access to effective information on sexuality and reproductive health for adolescents; such access is impeded by socio-cultural factors. In this country, pregnancy in adolescence constitutes about 20% of all pregnancies. These are often "at-risk" pregnancies. The current level of maternal mortality in Bangladesh is also very high, even by the standards of other developing countries. The maternal mortality ratio ranges from 320 to 400 per 100,000 live births, and approximately 320,000 women suffer annually from injuries or disabilities caused by complications during pregnancy and childbirth (National Institute of Population and Training [NIPORT] 2001). One of the main causes of these injuries is that most mothers go to unqualified persons during delivery (Mitra et al. 1994). Bangladesh is a developing country, and maternity hospitals are inadequate. Most pregnant mothers are accustomed to getting help from qualified or unqualified traditional birth attendants (TBAs) during delivery, or from their relatives or neighbours. Adolescents often lack choices in whether they can study and learn, work or earn, keep their own earnings or give them to their elders or spouses, or send their children to school (Singh 2003).

Other recent statistics indicate that among adolescent births only 1.8% were by Caesarean section (NIPORT 2001). The majority of adolescents delivered at home, although the percentage was higher for girls living in rural areas than in urban areas (91% versus 75%, respectively). Regardless of place of delivery, 32% of rural and 37% of urban deliveries were conducted by trained persons such as doctors, nurses or trained TBAs (International Center for Diarrhoeal Disease Research, Bangladesh 2003). According to the Bangladesh Demographic and Health Surveys (BDHS) for 1996–97 and 1999–2001, almost all adolescent births (95.4% and 93.1%, respectively) were at home, often under unsafe and unhygienic conditions (Mitra et al. 2001). Among the total adolescent births, 63.7% were assisted by TBAs, 28% by relatives/others, 4.8% by a physician and only 2.6% by a trained midwife. There was a great difference regionally, with a higher proportion of professionals attending deliveries in urban than in rural areas (33% versus 8%, respectively) (NIPORT 2001).

Although Bangladesh has achieved substantial gains in the field of health during the last three decades, there is an enormous gap between rural and urban areas in utilization of reproductive healthcare. Also, this country is still performing poorly with respect to skilled attendance at births and essential obstetric care. In this study, we investigated the characteristics and trends of rural adolescent mothers (aged 15 to19 years) receiving delivery assistance over the 5 years preceding the survey and identified the factors that influenced them in seeking that assistance. Study findings were envisaged as providing important guidelines for improving the rate of seeking assistance among this group.

Materials and Methods

The study utilized data from the 2004 BDHS, which was conducted under the authority of the National Institute of Population Research and Training of the Ministry of Health and Family Welfare. BDHS 2004 is a nationally representative survey of 11,440 ever-married women aged 10 to 49 years and 4297 men aged 15 to 54 years. It covered 10,500 households and 361 sample points (clusters) throughout Bangladesh, with 122 in urban and 239 in rural areas. Of the 11,440 ever-married samples, 2586 and 8854 were women from urban and rural areas, respectively. The study considered only adolescent mothers with a live birth in the 5 years preceding the survey. Very few ever-married adolescent women in the age group 10 to14 years had given live birth (only three cases, at the exact age of 14). These women were therefore removed from the data set, and the study considered only adolescents in the 15 to19 age group.

In order to fulfill our objectives, we classified respondents who received delivery assistance during different years into five groups – 2000, 2001, 2002, 2003 and 2004. Bivariate analysis was performed to determine the differentials of modes of delivery assistance by explanatory variables. Pearson's Chi-square test of independence was performed to test the existence of significant association between categories of delivery assistance and selected risk factors. A bivariate analysis between a dependent and an independent variable shows a simplified view of an association in isolation from other independent variables. However, a multivariate analysis between a dependent variable and several independent variables can show associations that reflect the real situation, where many independent variables are operating together. To determine which factors are most strongly associated with the choice of treatment from a medically trained provider, a binary logistic regression was employed (Cox 1970). One model has been considered in this study. The response variable for this model has two categories: mothers who received delivery assistance from medically trained providers (coded 1) and mothers who did not (coded 0). The study considered 19 independent variables (risk factors) in bivariate analysis. Significant risk factors depicted from bivariate analysis were considered for multivariate modelling to assess the net effect of each factor on delivery assistance from medically trained personnel among adolescent mothers with live births in the 5 years preceding the survey. Significant variables ($p < .05$) found from bivariate analyses were included in the logistic regression model to assess delivery assistance from medically trained providers. The statistical package program SPSS, Version 12.0, was used for all statistical analysis.

Results

Trend for Delivery Assistance and Place of Delivery

Table 1 shows that a larger proportion of the adolescents sought delivery assistance from non-medically trained personnel (NMTPs; untrained traditional birth attendants, relatives, neighbours, etc.) than from qualified health professionals during 2000–2004. Delivery care from medically trained providers (MTPs) such as doctors or nurses increased gradually from 2000 to 2003 (7.7% to 8.8%) and more quickly in 2004 (18.2%). Table 1 also depicts that child delivery among adolescents mostly occurred at home (93.6%). An increasing trend was found for delivery assistance from private hospitals from 2000 to 2004, and the percentage of mothers who received assistance from public hospitals decreased from 2000 to 2003 but increased in 2004.

Table 1. Trend analysis of maternal delivery assistance and their place of delivery

Characteristics	2000 *N* = 117	2001 *N* =198	2002 *N* = 235	2003 *N* = 273	2004 *N* = 44	2000–2004 *N* = 867
Delivery assistance						
MTP	7.7	8.1	8.1	8.8	18.2	8.8
NMTP	76.9	83.3	83.0	78.4	70.5	80.1
No one	15.4	8.6	8.9	12.8	11.4	11.1
Place of delivery						
Home	93.2	94.9	94.0	93.8	86.4	93.6
Public	6.0	2.0	3.0	3.3	9.1	3.6
Private	0.9	2.0	2.1	1.5	2.3	1.7
Other	0.0	1.0	0.9	1.5	2.3	1.0

MTP = medically trained provider (doctor, nurse/midwife, family welfare visitor, medical assistant/sub-assistant medical officer; health assistant or family welfare assistant).
NMTP = non-medically trained provider (traditional birth assistant [TBA]), untrained TBA, unqualified doctor, relatives, friends, other.

Delivery-Related Complications

Table 2 shows the incidence of delivery-related complications reported in the sample. A total of 40.3% of adolescent mothers reported having experienced delivery-related complications. These included prolonged labour (20.3%), excessive bleeding (8.3%), high fever (6.0%), convulsions

(4.1%) and hands and feet came first (1.3%). According to the final 2004 BDHS report, about 25.9% of women between the ages of 15 and 49 suffered at least one of those complications. Most common was prolonged labour, associated with 17% of live births. Eleven percent of the mothers experienced excessive bleeding and 3% had convulsions. The results are similar to our findings (BDHS Final Reports, 2004).

Table 2. Percentage of adolescent mothers with delivery-related complications

Experienced complications	Percentage (%)
Yes	40.3
No	59.7
Type of complications	
Prolonged labour	20.3
Excessive bleeding	8.3
High fever	6.0
Convulsions	4.1
Hands and feet came first	1.3

Differentials in Receiving Delivery Assistance

Table 3 shows that about 8.5% of mothers who received antenatal care sought assistance from non-medically trained providers (NMTPs) during delivery, whereas 79.6% sought assistance from MTPs. A higher proportion of women who were undecided about fertility preference sought assistance from MTPs than their counterparts. More mothers who had wanted their last child received assistance from MTPs than their counterparts. Mothers who had ever used contraception received delivery assistance more from non-medically trained personnel and less from MTPs. Mothers who gave a positive response for their pregnancy complications sought more assistance from MTPs. Almost the same response was observed from mothers who knew where to get proper healthcare services for pregnancy-related complications (Table 3).

Table 4 shows delivery assistance by socio-economic characteristics. More adolescent mothers in Chittagong (12.8%) and Khulna (12.7%) divisions sought assistance from MTPs than those from the other divisions. The largest proportion of adolescents assisted by NMTPs was in Sylhet division (83.8%). Muslim mothers sought less assistance from MTPs than non-Muslim mothers. Seeking assistance during childbirth was positively related with mother's education. More mothers with secondary education were assisted by MTPs than mothers with less education. All adolescents mothers who were working for cash received delivery assistance from NMTPs, and 7.6% of those who were working, but not for cash, received assistance from MTPs. Of mothers whose husbands had secondary/higher or primary levels of education, 12.5% and 8.8% respectively received assistance from MTPs. Wives whose husbands were professional workers took more assistance from MTPs; the opposite was observed when husbands were involved in manual or other activities. Mass media exposure also had a positive effect: Mothers who had been visited by an FPW prior to pregnancy were more likely to be assisted by qualified persons than those who have never been visited by an FPW.

Table 5 shows delivery assistance according to household characteristics. About 10.0% of adolescent mothers whose household had electricity received assistance from MTPs. A greater proportion of women from households with piped drinking water were assisted by MTPs than those using well water or water from other sources such as rivers or lakes.

Table 3. Adolescent mothers' delivery assistance (%) according to their demographic and health-related characteristics

Characteristics	Response	MTP	NMTP	No one	No. of cases	χ^2, df, *P*-value
Antenatal care received***	Yes	79.6	8.5	11.9	457	13.27, 2,< .001
	No	9.0	80.7	10.3	410	
Future fertility intention	Wants	9.4	78.9	11.7	630	3.67, 4, .160
	Undecided	15.8	84.2	0.0	19	
	Does not want	7.2	83.1	9.7	195	
Ever used contraception	Yes	8.3	81.1	10.7	664	1.09, 2, .577
	No	10.3	77.4	12.3	203	
Wanted last child***	Yes	25.0	50.0	11.0	863	115.03, 2, < .001
	No	8.7	80.3	25.0	4	
Told about pregnancy complications**	Yes	9.9	79.2	10.9	260	13.27, 2, < .01
	No	6.2	82.3	11.5	607	
Told where to go for pregnancy complications	Yes	23.1	76.9	0.0	247	3.75, 2, .466
	No	5.3	82.6	12.1	13	

df = degrees of freedom; MTP = medically trained provider (doctor, nurse/midwife, family welfare visitor, medical assistant/sub-assistant medical officer; health assistant or family welfare assistant).
NMTP = non-medically trained provider (traditional birth assistant [TBA]), untrained TBA, unqualified doctor, relatives, friends, other.
***$p < .001$, **$p < .01$, *$p < .05$.

About 9.6% and 80.3% of mothers with modern toilet facilities sought assistance from MTPs and NMTPs, respectively. The proportion who sought assistance from MTPs was higher among mothers in the upper category of the household quality index (16.7%).

Determinants of Receiving Assistance during Delivery from Medically Trained Providers: A Multivariate Logistic Regression Analysis

Table 6 shows that mothers who had received antenatal care (ANC) were 1.170 times more likely to be assisted by MTPs during childbirth than women who had not received ANC. Mothers who had wanted their last pregnancy were 2.212 times more likely to receive assistance from MTPs than those who had not wanted their last child. Mothers who told others about their pregnancy complications were 1.543 times more likely to seek assistance from MTPs than among who had not told. Table 6 also reveals that the chance of seeking assistance from MTPs increased with the respondent's level of education. Adolescents with secondary education were 2.209 times more likely to receive assistance from MTPs than those with no education. The same result is found for husbands' education. Mothers whose husbands were not manual workers (that is, who were service/businessman/managerial/technical) were 1.781 times more likely to take assistance from MTPs than those whose husbands were manual workers (farmers/domestic servants/day labourers).

Mass media exposure also showed a positive effect on utilization of government healthcare facilities at delivery. Mothers with mass media exposure were 1.241 times more likely to receive delivery assistance from MTPs than who had none. Adolescents who had been visited by an FPW prior to their pregnancy were more likely (odds ratio 1.544) to have their deliveries conducted by qualified persons than those who had never been visited. Mothers with modern toilet facilities were 1.636

times more likely to receive assistance during delivery from government-trained personnel than those with no toilet facilities. Mothers in better-quality houses were 1.763 times more likely to receive assistance from MTPs than those in lower-quality houses.

Table 4. Adolescent mothers' delivery assistance (%) according to socio-economic characteristics

Characteristics	Response	MTP	NMTP	No one	No. of cases	χ^2, df, *P*-value
Division	Barisal	6.4	82.6	11.0	109	102.31, 8, .160
	Chittagong	12.8	79.5	7.7	156	
	Dhaka	6.7	83.0	10.3	165	
	Khulna	12.7	74.6	12.7	134	
	Rajshahi	6.1	79.5	14.4	229	
	Sylhet	9.5	83.8	6.8	74	
Religion	Muslim	8.6	80.5	11.0	792	2.09, 2, .665
	Non-Muslim	11.1	76.4	12.5	72	
Mother's education ***	No education	4.1	83.1	12.9	171	44.48, 4 ,< .001
	Primary education	7.7	81.1	11.1	297	
	Secondary education	11.5	78.2	10.3	399	
Mother's earning status	Working for cash	0.0	100.0	0.0	60	4.87, 2, .221
	Working not for cash	7.6	82.9	9.5	105	
Husband's education **	No education	6.9	81.0	12.1	116	55.18, 6, < .01
	Primary education	8.8	82.5	7.9	80	
	Secondary/higher education	12.5	76.3	11.3	240	
Husband's occupation ***	Manual	8.1	82.2	9.7	258	42.48, 4, < .001
	Not manual	10.5	81.5	8.0	162	
	Other	5.9	70.6	23.5	17	
Mass media exposure *	Yes	12.5	79.1	8.4	603	6.03, 2, < .05
	No	7.3	80.2	12.6	262	
Visits of FPW in the last 6 months**	Yes	19.3	74.1	6.6	552	15.77, 2, < .01
	No	11.2	69.7	19.1	365	

df = degrees of freedom; FPW = family planning worker; MTP = medically trained provider (doctor, nurse/midwife, family welfare visitor, medical assistant/sub-assistant medical officer; health assistant or family welfare assistant); NMTP = non-medically trained provider (traditional birth assistant [TBA]), untrained TBA, unqualified doctor, relatives, friends, other.
***$p < .001$ (highly significant), **$p < .01$ (significant), *$p < .05$ (less significant).

Discussion

This study has been designed to assess delivery assistance among the adolescent mothers in rural Bangladesh. The increasing trend for receiving delivery assistance from medically trained personnel over the period was probably due to an increase in the number of health centres in recent years. In our study, however, we found that Bangladesh is still a poor performer with regard to delivery assistance among rural adolescents. Among that group, almost all births took place at home (93.6%). Only 3.6% of adolescent mothers went to public hospitals for childbirth.

Table 5. Adolescent mothers' delivery assistance (%) according to household-related characteristics

Characteristics	Response	MTP	NMTP	No one	No. of cases	χ^2, df, *P*-value
Having electricity	Yes	10.0	78.8	11.2	259	5.67, 2, .150
	No	7.9	81.0	11.1	605	
Source of drinking water	Piped water	9.9	67.9	22.2	09	8.83, 4,.177
	Tube-well	8.8	80.2	11.1	830	
	Others	4.0	88.0	8.0	25	
Type of toilet facility***	No facilities	6.1	74.3	19.7	132	55.64, 4, < .001
	Modern	9.6	80.3	10.0	478	
	Open /hanging/ other	7.9	83.5	8.7	254	
Household asset index	Lower	7.4	79.4	13.2	68	14.76, 4, .556
	Middle	9.5	73.8	16.7	42	
	Upper	0.0	100.0	0.0	4	
Household quality index**	Lower	8.3	78.7	12.9	448	12.53, 4, < .01
	Middle	8.8	81.8	9.3	408	
	Upper	16.7	83.3	0.0	6	

df = degrees of freedom; MTP = medically trained provider (doctor, nurse/midwife, family welfare visitor, medical assistant/sub-assistant medical officer; health assistant or family welfare assistant); NMTP = non-medically trained provider (traditional birth assistant [TBA]), untrained TBA, unqualified doctor, relatives, friends, other.
***$p < .001$, **$p < .01$, *$p < .05$.

Maternal mortality is commonplace in Bangladesh, and delivery-related complications are a leading cause, especially among adolescents. Our study found that about 40.3% of adolescent mothers reported having experienced delivery-related complications at some time during their pregnancy. Among those adolescents who reported delivery related compilations, prolonged labour was found to be higher (20.3%). In our study we observed that NMTPs conducted most rural adolescent deliveries. Qualified persons such as doctors, nurses, midwifes, family welfare visitors and trained birth attendants conducted only 8.8% of deliveries.

The observation that Muslim mothers sought less assistance from MTPs and more from NMTPs than non-Muslim mothers can most likely be attributed to religious beliefs. Muslims husbands do not give their wives permission to go to doctors or go outside their home (World Health Organization 2001). The element of choice is important in Bangladesh's socio-cultural climate, where women are reluctant to be examined by a male physician or an unfamiliar nurse in healthcare facilities. Health facilities in Bangladesh still lack sufficient female health personnel, and the demand for women's medical care to be provided by women is increasing. For women who observe the traditional rules of modesty or Islamic purdha, TBAs may appear to be a better alternative.

In this study we found that husbands' education and occupation was a strong predictor of seeking

Table 6. Logistic regression estimates for significant characteristics of adolescent mothers receiving assistance during delivery from medically trained providers, 2000–2004

Characteristics	Response	Assistance from MTP		Confidence interval	
		Coefficient β	Odds ratio	Lower	Upper
Antenatal care received	No[a]	-	1.000	-	-
	Yes	0.157	1.170***	0.71	1.72
Told about pregnancy complications	No[a]	-	1.000	-	-
	Yes	0.483	1.543**	0.91	2.31
Wanted last child	No[a]	-	1.000	-	-
	Yes	0.587	2.212***	0.95	3.12
Mother's education	No education[a]	-	1.000	-	-
	Primary	0.793	2.044**	1.21	3.92
	Secondary	0.715	2.209***	1.29	4.43
Husband's education	No education[a]	-	1.000	-	-
	Primary	0.482	1.015*	0.70	1.53
	Secondary	0.015	1.620**	1.19	2.91
Husband's occupation	Manual[a]	-	1.000	-	-
	Not manual	0.577	1.781*	0.85	2.04
	Others	-0.595	0.551	0.49	1.48
Mass media exposure	No[a]	-	1.000	-	-
	Yes	0.216	1.241***	0.63	1.86
Visits of FPW in the last 6 months	No[a]	-	1.000	-	-
	Yes	0.434	1.544***	0.94	2.67
Type of toilet facility	No facilities[a]	-	1.000	-	-
	Modern	0.492	1.636**	0.81	2.21
	Open /hanging/ others	0.098	1.103	0.63	1.86
Household quality index	Lower[a]	-	1.000	-	-
	Middle	-0.393	0.675	0.42	1.22
	Upper	0.567	1.763*	0.97	3.29

[a] Reference category.

FPW = family planning worker; MTP = medically trained provider (doctor, nurse/midwife, family welfare visitor, medical assistant/sub-assistant medical officer; health assistant or family welfare assistant).

***$p < .001$, **$p < .01$, *$p < .05$.

delivery assistance from well-qualified persons. Well-educated people know the risks of taking assistance from TBAs or other untrained people. Professional workers are usually more educated and conscious of the health of their family members, and encourage and help their wives to seek assistance from health professionals (Rafiqul et al. 2006). Mass media exposure also had a positive effect on assistance during delivery. In recent years, a number of governmental and non-governmental organizations have enriched their maternal and child health–related programs on television, on radio and in newspapers; this is likely to have increased mothers' knowledge about safe motherhood. The observation that women who received ANC services sought assistance more from MTPs may be due to the fact that antenatal visits and care may raise awareness of the need for care at delivery, or may give women and their families a familiarity with health facilities that enables them to seek care more efficiently during a crisis (Sai and Measham 1992; Palaniappan 1995). Different retrospective studies have found that lack of antenatal care is an important risk factor for maternal death (Kwast and Liff 1988; Garenne et al. 1997). Household economic indices and hygienic conditions also have implications in seeking care from healthcare facilities. It has been shown that better hygienic conditions, such as use of potable water and type of toilet facilities, are positive indicators of seeking maternal healthcare (Goodburn et al. 1995). Women using piped water for safe drinking purposes had taken assistance more from medically qualified persons than mothers using water from other sources. Type of toilet facility positively affected seeking delivery assistance: adolescent mothers using modern toilets were more interested in assistance from MTPs.

Complications during pregnancy are a vitally important issue (HSDP-MHR 2003). Mothers cannot tell others of their problems during pregnancy because of societal attitudes. We have to reduce this situation. Our study elucidates that mother's attitude during pregnancy highly significantly affects her decision to seek assistance from MTPs. Mothers who told others of their pregnancy complications received birth assistance from MTPs more than adolescents who could not tell. Adolescent mothers who had ever been visited by an FPW prior to pregnancy were more likely to be assisted at delivery by qualified persons than those who have never been visited by an FPW.

In conclusion, findings from this study confirm the importance of education, antenatal care, telling others about pregnancy complications, assets, wanted pregnancy, husband's occupation, mass media exposure and the number of visits by an FWA/FWV to adolescent women during pregnancy in the utilization of healthcare services. Respondents who had a higher level of education, who received antenatal care, used modern toilet facilities, whose household quality index was higher, and whose husband had a higher level of education and engaged in non-manual work were more likely to use healthcare facilities provided by trained personnel at the time of delivery. This reflects the reality that only people from a higher economic or educational group can afford to seek healthcare from trained personnel, irrespective of their needs. The findings convey the essential message that as the vast majority (93.6%) of births were at home, major efforts should be taken to provide traditional birth attendants in remote areas with basic midwife training.

References

Bangladesh Demographic and Health Survey Final Reports. 2004. Dhaka: NIPORT and Calverton (MD): Bureau of Statistics and Macro International. National Institute of Population Research and Training, Mitra and Associates, and Macro International.

Cox, D.R. 1970. "The Analysis of Binary Data." London: Methuen.

Goodburn, E.A., R. Gazi and M. Chowdhury. 1995. "Beliefs and Practices Regarding Delivery and Postpartum Maternal Morbidity in Rural Bangladesh." *Studies in Family Planning* 26: 22–32.

Garenne M., K. Mbaye , M.D. Bah and P. Correa. 1997. "Risk Factors for Maternal Mortality: A Case Control Study in Dakar Hospitals (Senegal)." *African Journal of Reproductive Health* 1: 14–24.

HSDP-MHR. 2003. "Health System Development Program – Maternal Health Review." Bangladesh. HSD/WP/02/03.

International Center for Diarrhoeal Disease Research, Bangladesh (ICDDR, B). 2003. "Reproductive Health Knowledge, Attitude and Practices of Adolescents." ICDDR, B. Center for Health and Population Research.

Kwast, B.E and M. Liff. 1988. "Factors Associated with Maternal Mortality in Addis Ababa, Ethiopia." *International Journal of Epidemiology* 17: 115–21.

Mitra, S.N., M.N. Ali, S. Islam, A.R. Cross and T. Sha. 1994. Bangladesh Demographic and Health Survey, 1993-94. Calverton, Maryland and Dhaka, Bangladesh: National Institute of Population Research and Training (NIPORT), Mitra and Associates and Macro International Inc.

Mitra, S.N., A. Al-Sabirand, A.R. Cross. 2001. Bangladesh Demographic and Health Survey 1996-1997. Dhaka: NIPORT.

NIPORT. 2001. Bangladesh Maternal Health Services and Maternal Mortality Survey. *Final Report.* Calverton, MD: ORC Macro.

Palaniappan, B. 1995. "Role of Antenatal Care in Safe Motherhood." *Journal of the Indian Medical Association* 93: 52–4.

Rafiqul, I., M. Chowdhury, A. Islam, J. Gulshan and N. Chakraborty. 2007. "Delivery Complications and Healthcare-Seeking Behavior: The Bangladesh Demographic and Health Survey, 1999–2000." *Health and Social Care in the Community* 15(3): 254–64.

Sai, F.T and D.M. Measham. 1992. "Safe Motherhood Initiative: Getting Our Priorities Straight." *The Lancet* 339(8791): 478–80.

Singh, E. 2003. "Adolescent Reproductive Health in South Asia: Key Issues and Priorities for Action." Geneva: World Health Organization.

World Health Organization. 2001. *Maternal and Newborn Health/Safe Motherhood (MSM)* — Indicators. Geneva: World Health Organization. Retrieved April 10, 2001. <http://www.who.int/rht/msm/msm_indicators.htm>.

Factors Influencing Mothers' Role in Convulsion Treatment among Under-Five Children in Ibadan, Nigeria

Ezenwa E. Nwokocha, Department of Sociology, University of Ibadan, Ibadan, Nigeria

Aanuoluwayomi O. Awomoyi, Department of Sociology, University of Ibadan, Ibadan, Nigeria

Ezenwa E. Nwokocha, PhD, Department of Sociology, Faculty of the Social Sciences, University of Ibadan, Ibadan, Nigeria; Tel. 234-803-719-2660; Email: ee.nwokocha@mail.ui.edu.ng

Abstract

Convulsion among children between six months and five years is a major contributor to childhood mortality in less-developed societies, especially in sub-Saharan Africa. Most studies on under-five deaths have ignored the influence of socio-demographic and environmental factors as they relate to causes of the thematic health condition and available therapies. This study investigated mothers' perception of convulsion causation, relevant signs and symptoms, and the influence of socio-economic status on mothers' choice of remedies. The research was conducted in Ibadan, southwest Nigeria, which is densely populated with mainly Yoruba-speaking people. The study population comprised mothers who, at the time of fieldwork for the present analysis, had at least one under-five child. Five hundred questionnaire respondents were selected through a multistage sampling technique, and 14 in-depth interviews (IDIs) were conducted among different categories of women identified through the snowball technique. Voluntary Social Action Theory and the Health Belief Model were used in explaining the relationship between the dependent and independent variables. The findings show that the remedies mothers chose were strongly influenced by socio-demographic factors such as marriage type, religion, level of education, occupation and place of residence. It is strongly suggested that interventions, health policies and programs should focus on how best to empower women to effectively utilize medical information that will enable them recognize symptoms of this common health condition and/or undertake preliminary therapies that contribute positively to convulsion prevention or treatment.

Background and Problem Statement

Convulsion is a major cause of under-five mortality, especially in sub-Saharan Africa, which has the highest prevalence rate in the world (Amouzou and Hill 2004; Hodges and Williams 1998). In 2006, the under-five mortality rate in this region was 160 per 1000 live births, more than double that of the worldwide rate of 72 per 1000 (UNICEF 2007). Nigeria is among the countries in Africa that contribute disproportionately to these mortality statistics, suggesting a serious burden of preventable childhood diseases. As Hodges and Williams (1998) have stated, convulsion ranks high among medical conditions that are related to childhood mortality and is a major contributor to the high under-five mortality rate in Nigeria. Data show that the infant mortality rate (expressed per 1000 live births) in Nigeria increased from 75 in 2002 to 100 in 2007 (Population Reference Bureau 2002, 2007).

On average, under-five mortality figures in less-developed societies, particularly in Africa, are high despite significant declines in most parts of the more developed world. For instance, information from the World Health Organization (WHO 2004) indicates that one in five African children die before age five, in spite of global improvements in medical science. As Wallace (1998) points out, approximately 2% to 4% of children experience at least one convulsive episode before age five, heightening their vulnerability to childhood mortality. The situation is exacerbated by the low status of women, exemplified in powerlessness, high illiteracy levels, unemployment and subjugation. These variants of patriarchy unwittingly undermine both choice of treatment options and the decision to use these options at critical moments where the approval of men and husbands is unassailable (Nwokocha 2007).

Mothers' choice of treatment options is embedded in complexity defined by the social, economic and cultural context. As a major problem related to under-five mortality in Nigeria, Jegede et al. (2005) noted that health-seeking behaviour is dependent on specific socio-cultural circumstances in which the illness takes place and the mother's interpretation of the situation. Amouzou and Hill (2004) have noted that several studies have demonstrated a close association between child mortality and socio-economic status. Argeseanu (2004) specifically found that the mother's level of education is strongly associated with improved child survival in Nigeria.

At the individual level, treatment-seeking behaviour is a function of belief about disease causation and perceived cure (Mwenesi et al. 1995). However, where such belief and perception are guided by ignorance, treatment choices would likely be contrary to effective cure. Jegede (1998) has revealed that certain illnesses are considered more responsive to orthodox medicine while others are believed to be better handled through traditional healthcare services. However, identifying which conditions are better associated with either of the medical systems has been particularly difficult. This difficulty explains the persistent shuttling between systems among mothers in Nigeria, especially in the southern part of the country (Erinosho 1998; Jegede 1998).

The implications of this characteristic uncertainty are avoidable delays and deaths. Anecdotal evidence reveals that many countries in the Middle East, North Africa and East Asia have made impressive progress toward Millennium Development Goal (MDG) 4 by achieving steep declines in under-five mortality (UNICEF 2007). This study therefore seeks to bridge the gaps in knowledge related to under-five mortality in Nigeria by identifying the socio-cultural, demographic and environmental factors affecting treatment options such as traditional, home and hospital based therapies, among relevant mothers with a view to suggesting appropriate remedies. Primarily, the findings and resulting recommendations will impact policies that target effective implementation of child-survival programs to reduce infant and child mortality in less-developed countries.

Literature Review and Theoretical Framework

Literature Review

Knowledge on the health culture of a people is crucial to successful prevention and/or treatment of a given medical condition (Helman 1990). As Oke (1996) has observed, the use and non-use of health services is largely determined by the socio-cultural environment. In addition, Erinosho

(1998) noted that many culture-related syndromes are effectively managed through an informed knowledge of the patient's culture and background. Consequently, treatment options are determined by a catalogue of factors such as the perceived cause of the illness/condition, the environment and the extent to which a health seeker is able to recognize choices that are most appropriate. In line with the above assertion, it has been pointed out that a person's response to illness will depend on the ability to correctly recognize its signs and symptoms, and the evaluation of the seriousness of these indicators (Diallo et al. 2001; Nyamongo 2002).

The World Bank (1998) has noted that maternal and infant mortality depends to a large extent on whether women have access to the information, education and communication resources they need to provide themselves and their infants with adequate care. This shows that the achievement of safe motherhood among women results from the interaction of several factors in the society and that the well-being of mothers is intrinsically linked with child welfare and survival, especially in situations where men as fathers barely live up to their roles (Isiugo-Abanihe 2003).

Several reasons are responsible for lack of access to health facilities in various settings. For instance, the United Nations (2000) observed that in most rural settings, at least one in three women live more than 5 km from the nearest facility and that at least 80% live more than five km from the nearest hospital. Such distance may not be seen as undermining healthcare, especially among those who resort to self-medication either in the short or long term. Records show that very recently only 35% of the Nigerian population had access to the modern healthcare system, while the remaining 65%, the majority of them women, employed the services of traditional healers (Odebiyi and Aina 1998; Adeyeye 2001).

As documented by Ahorlu et al. (1997), management of childhood illness most often begins at home, while medicine shops are usually the second port of call (Neema n.d.). Reasons adduced by parents for seeking care from medicine vendors include ease of obtaining advice, personalized interaction and flexible pricing (Adetunji 1991). As has been revealed, most cases of illness begin and end with self-treatment (McCombie 1996), and most people are satisfied with their first choice of care (Salako et al. 2001).

Though some studies (Yeneneh et al. 1993; Tsuyuoka et al. 2001) have recorded preference for government clinics over other sources, research conducted in Uganda has shown that community members have lost confidence in government facilities (Nsabagasani n.d.). In addition, other variables identified as affecting health outcomes in several African communities include lack of accessibility to skilled personnel who can effectively manage medical complications (especially among those living in rural areas), impassable roads or lack of a transportation system, poverty, or a combination of these variables (Ransom and Yinger 2002; Zlidar et al. 2003).

Scepticism about the effectiveness of government clinics is also a feature of Nigeria's medical system. We have seen that 65% of the population, mostly women, use the services of traditional healers, a group that includes traditional birth attendants (Adeyeye 2001). Furthermore, this preference is increasing. Reasons for preferring traditional healers include cultural beliefs and practices, convenience of access and cost of services.

Theoretical Framework

Talcott Parsons' Voluntary Social Action Theory, which emphasizes constraint of individuals within particular customs and values, has been adopted for this study to explain human behaviour with regard to socio-cultural factors and their influence on pregnancy outcomes. Much like Weber's Social Action Theory, which asserts the primacy of society over the individual (Giddens 2000), Parsons argues that societies exert social constraint over the actions of individuals.

This perspective focuses on the course of action as determined by the physical and social environment; society influences the ends that the actor seeks and the means he or she will use to attain them. Parsons' theory, like Weber's, states that action can be explained in the context of the subjective meaning given to it by the actor and that actions are always directed at the attainment of goals with the choice of the most appropriate method by the actors (Ritzer 2008). Parsons however, by emphasizing the importance of societal factors in constraining the ends that an individual can pursue and the means of pursuing them extends Weber's position.

Parsons' Voluntary Social Action Theory states the following:

1. People's actions are directed toward the achievement of end goals. This translates to health seeking by mothers directed toward attaining good health for their under-five children.
2. People adopt the appropriate means and procedures from those available to attain their goals. This suggests that individual mothers are left with alternatives, especially with regard to options available.
3. Courses of action are determined by the conditions of the physical and social environment. The environment and the structures inherent in it shape as well as dictate the individual actor's perception and attitude toward a particular action.
4. Individuals have emotions and make moral judgments that influence the selection of ends and means and their order of priority. This emphasizes the freedom of individuals to seek whatever approach and activity they perceive necessary in order to achieve a goal, in this case good health for under-five children.
5. Lastly, actions are to be explained by the subjective meaning given them by the actor or by his or her perception and definition of the ends and conditions of the situation (Ritzer 2008).

This Parsonian position in viewing good health as optimization of gratification emphasizes the effect of socio-cultural factors on convulsion treatment. Erinosho (1978) and Oke (1982, 1996) in their model of socio-cultural variables following this same view: that one's social and cultural environments are dictated by norms that in turn define one's actions in a given social context.

Rosenstock's Health Belief Model (1966) is adopted as a complementary perspective in an attempt at a comprehensive explanation of the thematic phenomenon. The model explains health-related behaviour from a social–psychological perspective using the theories of value-expectancy and decision making. It focuses on dimensions affecting an individual's control over a specific action and uses those same dimensions to predict behaviour. The position of this model, which focuses on the individual's subjective assessment of the health situation, especially in utilization of health services, is that by taking a particular action, an individual's susceptibility/vulnerability would be reduced or, if disease had already occurred, severity would be ameliorated.

The model is based on the understanding that a person will take a health-related action such as, in the present context, mothers taking precautionary health measures perceived necessary to avoid a negative health condition, including convulsion among their children, if convinced that the action taken will likely be effective and beneficial. The model asserts that a person's motivation to undertake a health-related behaviour can be found in the following factors: perceived susceptibility, severity, benefits and barriers, and cues to action. Applying this model in the analysis presupposes that these mothers have sufficient awareness of convulsion to appreciate their children's vulnerability to the condition, recognize symptoms before convulsions occurs and take the most appropriate action to ameliorate the effects when convulsion has already occurred.

Materials and Methods

The study involved both qualitative and quantitative techniques of data collection. Specifically, primary data were generated through in-depth interviews and a survey questionnaire, while secondary information came from the literature. The study population consisted of 500 mothers residing in Ibadan, southwest Nigeria, with at least one under-five child. A multistage sampling method was used to select respondents for the study by first clustering Ibadan into two broad areas on the basis of residents' perceived income. Bodija and Akobo were chosen as high-income areas, Agbowo and

Beere as low income. Two locations were randomly selected from each of these areas for sampling.

The next stage involved random selection of 10 streets in each location, while systematic random sampling was adopted in the final selection of households. In each of these households, a mother of at least one under-five child was purposively included as a respondent. In households with more than one eligible mother, we used the ballot technique for selection. However, in households with no eligible mother, either because the children were older than the thematic age or because of infertility, the household was skipped for the nearest one. Fieldworkers observed ethical requirements by explaining the purpose of their activities, the right of respondents to refuse participation or to withdraw at any point in the research without inhibition, and an assurance that respondents' anonymity would be fully guaranteed to the extent that none of the information pertaining to the study could be traced to them. In all, all 500 questionnaires were returned and found usable, due to fieldworkers' patience in explaining questions to respondents and steadfastness in making return visits.

Use of in-depth interviews was meant to complement quantitative data necessary in examining a complex issue such as treatment options among mothers in a patriarchal society. Fourteen IDIs were undertaken among different categories of women identified through the snowball technique. They included seven mothers of under-five children, four whose children were older than five and three women identified through key information as knowledgeable about convulsion in children. To avoid double participation, interviewers recorded interview respondents' addresses and made them available to questionnaire distributors for skipping in the event that one of the IDI households was included in random selection.

Questionnaire data were edited and cleaned to eliminate inconsistencies that could undermine validity and reliability. Information generated from pre-coded, open-ended and fixed-choice questions was entered using Microsoft Access Software to minimize data entry errors and manage data. These data were finally exported and analyzed using the Statistical Package for Social Sciences (SPSS, Version 12.0). Univariate analysis involved the use of descriptive statistics such as frequencies and percentages, while bivariate analysis examined relationships among variables, with emphasis on parametric data. Multivariate analysis was undertaken to investigate the interaction of complex variables in explaining convulsion treatment in relation to the situation of women and mothers. Qualitative data were transcribed, translated and analyzed using ethnographic summaries and manual content analysis. Findings from both techniques are presented together.

The limitations of this study include paucity of data on convulsion treatment for under-five children; literature is scanty as little research has been undertaken on the subject. In addition, in the course of editing quantitative data, we found that some questionnaires had inconsistent responses, which was a reflection of the reluctance of some study respondents. Dealing with illiterate respondents was difficult, as it was not easy to convince them of the essence of the research. Another limitation is that the case-study approach was not adopted in the course of data collection. In a way, some concrete information pertaining to specific incidence of fatality was not generated.

Results and Discussion

Data on the demographic characteristics of respondents presented in Table 1 show that the 500 respondents are all female, appropriate considering that the study focused on factors affecting the role of mothers in convulsion treatment for under-five children. Mothers' ages ranged from 25 to 49 years. Table 1 reveals that respondents in age category 30 to 34 constitute 29.2% of the total and form the largest age group. They are closely followed by those of 35 to 39 years, who constitute 26% of respondents, while those aged 25 to 29 and 45 to 49 represent 14% and 12%, respectively. These results are not unexpected given that the age of marriage among women in the study area is rising, a consequence of more women pursuing higher education and the harsh socio-economic environment that is affecting the capacity of young men to marry. As such, most women aged 25 to 29 do not have under-five children. Similarly, most women aged 45 to 49 are no longer bearing children, and few have children under five.

Table 1. Percentage distribution of respondents by socio-demographic characteristics

Characteristics	Categories	Frequency	%
Sex	Male	0	0
	Female	500	100
	Total	**500**	**100.0**
Age	25–29	70	14.0
	30–34	146	29.2
	35–39	130	26.0
	40–44	94	18.8
	45–49	60	12.0
	Total	**500**	**100.0**
Ethnic group	Hausa	24	4.8
	Igbo	46	9.2
	Yoruba	402	80.4
	Others	28	5.6
	Total	**500**	**100.0**
Education	No education	28	5.6
	Primary	40	8.0
	Secondary	114	22.8
	Tertiary	302	60.4
	Other	16	3.2
	Total	**500**	**100.0**
Occupation	Trading	256	51.2
	Civil servant	174	34.8
	Artisan	14	2.8
	Housewife	56	11.2
	Total	**500**	**100.0**
Marital status	Married	456	91.2
	Separated	36	7.2
	Divorced	2	.4
	Widowed	6	1.2
	Total	**500**	**100.0**
Type of marriage	Monogamous	368	73.6
	Polygamous	120	24.0
	Other	12	2.4
	Total	**500**	**100.0**

Table 1 continued.

Characteristics	Categories	Frequency	%
Residence	High-income	266	53.2
	Low-income	234	46.8
	Total	**500**	**100.0**
Number of children	1–2	168	33.6
	3–4	260	52.0
	5–6	62	12.4
	7–8	10	2.0
	Total	**500**	**100.0**
Religion	Christianity	370	74.0
	Islam	98	19.6
	Traditional	32	6.4
	Total	**500**	**100.0**

The ethnic composition of study participants in Table 1 reveals that most are from the three major groups: the Hausa, Igbo and Yoruba, although Nigeria is composed of about 384 ethnic groups (Otite 2000). This explains the fairly large representation of members of these groups in most urban centres in the country. Respondents from other groups, combined, constitute only 5.6% of the total. The Hausa and Igbo ethnic groups comprise 4.8% and 9.2% of the total respectively. As expected, 80.4% are Yoruba; Ibadan is located in Southwestern Nigeria and is predominantly inhabited by the latter group.

For educational qualifications, 60.4% of respondents had tertiary school education, while 8.0% and 22.8% had primary and secondary, respectively. Ordinarily, we would have expected that a large majority of respondents would be formally employed, given the percentage with tertiary school education. On the contrary, Table 1 reveals that only 34.8% were civil servants, while 51.2% were traders. The disparity between education and occupation could be a function of a high unemployment rate among tertiary institution graduates that may have led them to a different means of livelihood, including trading. Interestingly, 11.2% of respondents were housewives with no involvement in economic activities, an indication of the powerlessness among women in a profoundly patriarchal society such as Nigeria.

In terms of residence, 53.2% of respondents lived in high-income areas that included Bodija and Akobo. Respondents living in low-income areas such as Agbowo and Beere constituted 46.8%. Table 1 also reveals that 52% of respondents had three or four children at the time of data collection, while 33.6% had one or two. Mothers with five or six children constituted 12.4% of respondents; only 2% had seven or eight children. These data may readily be interpreted to mean that fertility levels have dropped remarkably in Ibadan. However, this may not be so. Perhaps we can assume that these figures would most likely increase, as a large majority of these women are still fecund and will be for a long time. In terms of religious affiliation, 74% of respondents were Christians, 19.6% Muslims and only 6.4% Traditional religion.

Anecdotal evidence suggests that some mothers lack awareness about convulsion. It was necessary therefore to ask specific questions on what they knew about the condition and their perception of its causes. Results in Table 2 reveal their differing opinions on causation. Of the total, 44.8% of respondents indicated that high temperature is associated with convulsion.

Table 2. Distribution of respondents by perceived causes of convulsion

Categories	Frequency	%
No response	60	12.0
High temperature	224	44.8
Malaria	114	22.8
Irritation in the stomach	6	1.2
Harsh weather conditions	26	5.2
Spiritual attack	60	12.0
Genetic	10	2.0
Total	**500**	**100.0**

Another 22.8% stated that malaria causes convulsion. These two most frequently mentioned factors are similar, given that high temperature is one of the symptoms of malaria. Spiritual attack was the third most important factor identified; 12% linking this with convulsion. An IDI respondent recalled:

> I lost my daughter while she was giving birth to her son; this automatically conferred on me the responsibility of a foster mother to the boy. At a time, my grandson convulsed and being a midwife by profession I decided to do enema for him, in his anus, soon after he was resuscitated to enhance easy bowel movement. When he excreted, one naira coin was found in his excreta. He was three years old; when interviewed he revealed that he saw his late mother in the sitting room, prompting and persuading him to swallow the coin which was placed on the center table. My knowledge of convulsion is that it is a symptom of an attack.

The percentage of respondents who believed genetics or irritation of the stomach caused convulsion were 2.0% and 1.2%, respectively. Interestingly, 12% did not respond to the question on causation. Causes respondents mentioned reflect mothers' perceptions of disease generally, most of which are associated with natural, preternatural and mystical causes (Erinosho 1978; Oke 1982). From the foregoing, it is apparent that a more detailed breakdown of the different categories is necessary in order to see whether mothers' education, residence and ethnic group affect perceptions of what causes convulsion.

The cross tabulation in Table 3 shows the data on mothers' perceived cause of convulsion by selected variables. Results show that while mothers' education and residence were positively correlated, ethnic group was negatively correlated.

Table 3 shows that education is significantly related ($p = .000$) to mothers' perceived cause of convulsion. It is, however, interesting to note that some educated mothers attribute factors other than natural ones to convulsion. A respondent from the Bodija area of Ibadan linked convulsions to spiritual attack:

> As a proprietress, I am highly educated yet I believe convulsion is as a result of spiritual attack. One of my pupils convulsed and my staff and I resuscitated her. However, when her parents came I advised them to take her to church for prayers and deliverance from the spirits troubling her.

As a result of widespread health information and on the basis of scientific assumptions, convulsion is mainly ascribed to natural causes. Nevertheless, prognosis and progression of convulsion does not rule out preternatural and mystical causes, as can be seen in Table 3. Most respondents (70.4%)

Table 3. Respondents' level of education and perceived cause of convulsions

Education	Categorization of causes of convulsion					Total	X^2 Crit	X^2 Cal	*df*	*p*
	No response	Natural	Preternatural	Genetic	Mystical					
No formal education	4 14.3%	14 50.0%	2 7.1%		8 28.6%	28 100.0%	26.3	52.309	16	.000
Primary	4 10.0%	24 60.0%	2 5.0%		10 25.0%	40 100.0%				
Secondary	18 15.8%	56 49.1%	26 22.8%	2 1.8%	12 10.5%	114 100.0%				
Tertiary	22 7.3%	246 81.5%	12 4.0%	12 4.0%	10 3.3%	302 100.0%				
Others		12 75.0%			4 25.0%	16 100.0%				
Total	**48** **9.6%**	**352** **70.4%**	**42** **8.4%**	**14** **2.8%**	**44** **8.8%**	**500** **100.0%**				

$X^2 = 26.3$; *df* = 16; $p < .05$.

Table 4. Place of residence and perceived causes of convulsion

Residence	Categories of causes of convulsion						X^2 Crit	X^2 Cal	*df*	*p*
	No response	Natural	Preternatural	Genetic	Mystical					
Urban	20 7.5%	216 81.2%	12 4.5%	6 2.3%	12 4.5%	266 100.0%	9.49	17.350	4	.002
Rural	28 12.0%	136 58.1%	30 12.8%	8 3.4%	32 13.7%	234 100.0%				
Total	**48** **9.6%**	**352** **70.4%**	**42** **8.4%**	**14** **2.8%**	**44** **8.8%**	**500** **100.0%**				

$X^2 = 9.49$; *df* = 4; $p < .05$.

cited natural causes rather than mystical or supernatural ones. This implies that people will be more receptive to preventive measures, since humankind is known for controlling natural forces to ensure survival. As a corollary, the danger of emphasizing the supernatural cause is that undertaking preventive measures that relate to socio-cultural and physical factors would not be prioritized.

Table 4 shows that mothers' place of residence has a significant relationship ($p = .002$) with perceived cause of convulsion. For instance, 81.2% and 2.3% of urban respondents ascribe the cause to natural and genetic factors, respectively, compared with 58.1% and 3.4% of their rural counterparts. This disparity could be attributed to discrepancies in health-related knowledge in favour of urban residents. Expectedly, 26.5% of rural respondents attributed the causes of convulsion to a combination of preternatural and mystical factors, while only 9% of those in urban areas cited these factors. Table 5 shows that Yoruba respondents formed the majority (71.6%) of those who perceived natural factors as the cause, while 8.5% of Yoruba respondents believed it was preternatural and 8.0% mystical.

Table 5. Ethnic groups and perceived causes of convulsion

Ethnic group	Categories of causes of convulsion						X^2 Crit	X^2 Cal	*df*	*p*
	No response	Natural	Preternatural	Genetic	Mystical	Totals				
Yoruba	36 9.0%	288 71.6%	34 8.5%	12 3.0%	32 8.0%	402 100.0%	21.0	8.446	12	.749
Hausa	4 16.7%	12 50.0%	2 8.3%		6 25.0%	24 100.0%				
Igbo	4 8.7%	30 65.2%	4 8.7%	2 4.3%	6 13.0%	46 100.0%				
Others	4 14.3%	22 78.6%	2 7.1%			28 100.0%				
Total	**48** **9.6%**	**352** **70.4%**	**42** **8.4%**	**14** **2.8%**	**44** **8.8%**	**500** **100.0%**				

$X^2 = 21.0$; $df = 10$; $p < .05$.

It is clear from Table 5 that there is no significant relationship between mothers' ethnic group and perceived cause of convulsion. For instance, 8.5% of Yoruba respondents perceived preternatural factors as the cause of convulsion in these children. The percentage of Hausa and Igbo respondents with similar perceptions was 8.3% and 8.7% respectively. The limitation of the analysis related to this table is that ethnic groups other than the Yoruba are disproportionately under-represented, and the table may not reflect the views and attitudes of most members of other groups. As such, comparing these groups on the basis of the data in Table 5 would be misleading. It is thus better to assume, in the present analysis, that ethnic affiliation of respondents does not have consistent association with their perceived causes of convulsion among children.

Table 6 reveals that 54.4% of the respondents gave unconsciousness and tightening of teeth as indicators of convulsion among children. Those who identified high temperature, feeling cold and loss of appetite as signs and symptoms of the condition constitute 38%. A female interviewee corroborated those respondents' views when she commented:

> The first sign was that my son started feeling very cold and then at certain point felt hot and cried a lot; he was also finding it difficult to eat. He started losing weight and was sweating so much. He looked pale and weak, his eyes turned yellow almost as much as his urine. When the convulsive fits started he became unconscious and began to shiver and all of a sudden he was very stiff and hot, rolling his eyeball. His jaws were locked; I was scared to death.

Those who identified weakness and vomiting as signs and symptoms constituted 2.8%.

Table 6. Distribution of respondents by signs and symptoms of convulsion

Categories	Frequency	%
No response	24	4.8
High temperature, cold, loss of appetite	190	38.0
Unconsciousness and tightening of teeth	272	54.4
Weakness and vomiting	14	2.8
Total	**500**	**100.0**

Table 7 shows that a large percentage of mothers (18.0%) were ignorant about the consequences of convulsion. It is possible that these respondents have either not directly experienced convulsions in children or their children did not manifest consequences after the convulsive episode. Of respondents, 48.0% noted that convulsion among children could lead to death.

Table 7. Distribution of respondents by known consequences of convulsions

Categories	Frequency	%
No response	90	18.0
Leads to death	240	48.0
Affects child's brain	60	12.0
Disability	110	22.0
Total	**500**	**100.0**

Other consequences identified included disability, mentioned by 22% of respondents, and effect on the child's brain, mentioned by 12%.

Treatment pathways usually start with home remedies, after which the patient either goes to a babalawo (indigenous medicine man/spiritualist) or to the hospital when all other attempts fail (Ahorlu et al. 1997; McCombie 1996). The present study argues that avoidable delays in seeking care from facilities with relatively better equipment than most homes has implications for high under-five mortality. For instance, a woman interviewee narrated how her daughter died as a result of delay in seeking adequate medical care occasioned by bad advice:

> When my daughter had convulsion, my mother-in-law who stays with us suggested I treat her with my own urine. She insisted that the treatment was efficacious. Urine was given to the child to drink (forcefully though, because she was still unconscious) and the remainder was poured on her and also used in massaging her stiff body…but when the convulsion persisted for three consecutive days, neighbours advised I take her to the hospital. I did but eventually lost the baby the same evening when her condition relapsed.

Another respondent had an entirely different experience; she commented:

> Among my three children, only one had convulsion on three different occasions before his fifth birthday. The first aid I used included scent leaf, garlic, onions, pepper and at the same time I had to put spoon in his mouth to prevent teeth clenching. On each occasion, my child became normal once these therapies were administered and I have not had reason to seek an alternative treatment. Convulsion among children is natural and can be easily managed, at home, by mothers.

Corroborating the view of that interviewee, Table 8 shows that 15.2% of respondents stated that home medication is their preferred option for treating convulsion. However, what constitutes home medication may vary among individuals and groups and could be based on trial and error. As expected, the majority of respondents (49.6%) relied on hospitals for such treatment, given the notion in some quarters that orthodox medicine is superior to other systems (Nwokocha 2007).

Table 8 also shows that 29.6% and 5.6% of respondents identified traditional and spiritual healing, respectively, as treatment options. These figures indicate that approximately 50% of respondents relied on hospital treatment while the remaining half depended on other options. It is pertinent to state that choice of treatment option is determined by a range of factors including ideational, social, cultural, economic, demographic and environmental, in time and space.

Table 8. Distribution of respondents by treatment options for convulsion

Categories	Frequency	%
Home medication	76	15.2
Traditional healers	148	29.6
Hospital	248	49.6
Spiritual	28	5.6
Total	**500**	**100.0**

Table 9 displays data on two main income-based residence types (high and low, according to average monthly income of adults in the household) as they impinge on treatment options. The table shows some association between income and treatment options for convulsion. For instance, 58.6% of high-income respondents relied on Western medicine and only 13.5% made use of traditional therapy, while 5.3% undertook self-medication.

Table 9. Distribution of respondents by income-based type of residence and treatment options for convulsion

Residence	Treatment options						Total	X^2 Crit	X^2 Cal	*df*	*p*
	No response	Western	Traditional	Self-medication	Spiritual	Others					
High-income	26 9.8%	156 58.6%	36 13.5%	14 5.3%	4 1.5%	30 11.3%	266 100.0%	11.1	23.130	5	000
Low-income	34 14.5%	68 29.1%	66 28.2%	22 9.4%	8 3.4%	36 15.4%	234 100.0%				
Total	**60** **12.0%**	**224** **44.8%**	**102** **20.4%**	**36** **7.2%**	**12** **2.4%**	**66** **13.2%**	**500** **100.0%**				

$X^2 = 11.1$; $df = 5$; $p < .05$.

Among low-income respondents, Table 9 indicates that 29.1%, about half the percentage of high-income respondents, stated they used Western therapy in treating their children's condition. Those who relied on traditional medicine constituted 28.2% of low-income respondents. Thus respondents in this income group are almost equally divided between Western and traditional medical interventions.

The coefficient in Table 10 shows that the interactive predictive effects of age, education, occupation, residence, religion, ethnic group, type of marriage and marital status of mothers on their treatment options is significant at $f = 12.652$; $p = .023$. The multiple regression showed $R = .164$; $R2 = .027$. This means that jointly, the independent variables accounted for a 27% variance on mothers' treatment options.

However, when examined individually, some of the variables were not significant. Mother's age ($B = .006$, $p = .023$), education ($B = .100$, $p = 0.000$), occupation ($B = .013$, $p = 0.054$) and marital status (*B* = .026, *p* = 0.041) were not significantly related to treatment options. This means that the choice of treatment is better understood when examined against the backdrop of combined effects of independent variables than individually, as shown in Table 10, because some of them may not indicate a significant predictive strength.

Table 10. Multiple regression showing the joint and independent predictive strength of the independent variables on treatment options

Variables	*R*	*R2*	*B*	*B*	*T*	*P*	*f*	*Sig*
Age	.164	.027	4.034E-02	.006	.088	0.023	12.652	.023
Education			1.052	.100	1.058	0.000		
Occupation			5.635E-02	.013	.163	0.054		
Residence			2.778	.146	1.812	.071		
Religion			1.435	.089	1.112	.267		
Ethnic Group			-.283	-.026	-.378	.706		
Type of marriage			.875	.046	.590	.556		
Marital status			.470	.026	.403	0.041		

Conclusion

This study has contributed in advancing knowledge related to convulsion among under-five children and establishes that several factors affect the role of mothers in its treatment. It has become clear that male domination as it affects critical decision making during emergencies related to child health is inconsistent with present-day reality. The study argues quite forcefully that reduction in childhood deaths and in particular those associated with convulsion can be achieved with socio-economic and cultural empowerment of women. That way, mothers are able to promptly identify signs and symptoms of convulsion that are central to prevention and/or treatment efforts on one hand, and on the other prompt life-saving decisions during emergencies without necessarily depending on their absent husbands.

It has become necessary for Nigeria to attain significant reductions in the infant and childhood mortality rate in view of the present fertility decline in most communities. Without such reduction, individuals and communities may revert to high fertility as a means of ensuring that families have young members who will eventually replace the aged. The contradiction wherein improvement in medicine does not translate to mortality reduction, in particular among children, calls for deeper investigation and efforts to avert a demographic transition that would likely undermine improvement in societies that are already gasping for developmental breath.

References

Adetunji, J.A. 1991. "Response of Parents to Five Killer Diseases among Children in a Yoruba Community, Nigeria." *Social Science & Medicine*; 32: 1379–87.

Adeyeye, O.A. 2001, October 14–17. *Socio-economic Factors Influencing Access to Reproductive Health Services in Ile-Ife, Nigeria.* Paper presented at the 10th annual conference of the Population Association of Nigeria (PAN). Lagos.

Ahorlu, C.K., S.K. Dunyo, E.A. Afari, K.A. Koram and F.K. Nkrumah. 1997. "Malaria-Related Beliefs and Behavior in Southern Ghana: Implications for Treatment, Prevention and Control." *Tropical Medicine and International Health* 2: 488–99.

Amouzou, A. and K. Hill K. 2004. "Child Mortality and Socioeconomic Status in Sub-Saharan Africa." *African Population Studies*, 19(1): 1–11.

Argeseanu, S. 2004. "Risks, Amenities and Child Mortality in Rural South Africa." *African Population Studies* 19(1): 13–33.

Becker, M.H. 1974. *The Health Belief Model and Personnel Health Behaviour.* San Francisco: Society for Public Health Education, Inc.

Diallo, A.B., G. De Serres, A.H. Bavogui, C. Lapointe and P. Viens. 2001. "Home Care of Malaria-Infected Children of Less Than 5 Years of Age in a Rural Area of the Republic of Guinea." *Bulletin of the World Health Organization* 79: 28–32.

Erinohso, O.A. 1978. "Notes on Concepts of Disease and Illness: The Case of the Yoruba in Nigeria." *Nigerian Journal of Economic and Social Studies* 18(3).

Erinosho, O.A. 1998. *Health Sociology.* Ibadan: Sam Bookman.

Giddens, A. 2000. *Sociology* 3rd edition. Cambridge: Polity Press.

Helman, C.G. 1990. *Culture, Health and Illness* (2nd Edition). Oxford: Butterworth-Heinemann.

Hodges, M. and R.A. Williams. 1998. "Registered Infant and Under-Five Deaths in Freetown, Sierra Leone from 1987 to 1991 and Comparison with 1969–1979." *West African Journal of Medicine* 92: 95–8.

Isiugo-Abanihe, U.C. 2003. *Male Role and Responsibility in Fertility and Reproductive Health in Nigeria.* Ibadan: Ababa Press.

Jegede, A.S. 1998. *African Culture and Health.* Ibadan: Stirling Horden Publishers (Nig) Ltd.

Jegede, A.S., J. Amzat, K.K. Salami, P.O. Adejumo and M.O. Oyetunde. 2005. "Perceived Causes of Malaria among Market Women in Ibadan, Nigeria." *African Journal for the Psychological Study of Social Issues* 8(2): 335–47.

McCombie, S.C. 1996. "Treatment Seeking for Malaria: A Review of Recent Research." *Social Science & Medicine.* 43: 933–45.

Mwenesi, H., T. Harpha and R.W. Snow. 1995. "Child Malaria Treatment Practices among Mothers in Kenya." *Social Science & Medicine* 40(9): 1271–7.

Neema S. n.d. *Caretaker's Behavior in the Management of Childhood Diarrheal Diseases: A Study of Iganga and Mbarara Districts in Uganda.* ARCH project research portfolios. Retrieved July 31, 2007. <http://www.international-health.org/ARCH/portfolios/portfolios.html>.

Nwokocha, E.E. 2007. "Maternal Crises and the Role of African Men: The case of a Nigerian Community." *African Population Studies* 22(1): 39–62.

Nsabagasani, X. n.d. *Factors Influencing Caretaker Behavior in the Management of Acute Lower Respiratory Infection (ALRI): a Study of Mothers with under Fives in Uganda.* ARCH project research portfolios. Retrieved July 31, 2007. <http://www.international-health.org/ ARCH/portfolios/portfolios.html>.

Nyamongo, I.K. 2002. "Health Care Switching Behavior of Malaria Patients in a Kenyan Rural Community." *Social Science & Medicine* 54: 377–86.

Odebiyi, A.I. and O.I. Aina. 1998. "Women and Health in Nigeria." In A. Sesay and A. Odebiyi, eds., *Nigerian Women in Society and Development* pp. 98–121. Ibadan: Dokun.

Oke, E.A. 1982. "Social Epidemiology." In O.A. Erinosho, ed., *Nigerian Perspectives on Medical Sociology: Studies in Third World Societies* p. 19. Virginia, USA: Department of Anthropology, College of Williams and Mary

Oke, E.A. 1996. "The Emergence of Medical Sociology." In E.A. Oke and B.E. Owumi, eds., *Readings in Medical Sociology* pp. 1–14. Ibadan: Resource Development and Management Services.

Otite, O. 2000. "Nigerian Peoples and their Cultures." In H.I. Ajaegbu, B.J. St. Matthew-Daniel and O.E Uya, eds., *Nigeria: A People United, A Future Assured*, Vol. 1. Calabar: Gabumo press

Population Reference Bureau. 2002. *World Population Data Sheet of the Population Reference Bureau.* Washington DC.

Population Reference Bureau. 2007. *World Population Data Sheet of the Population Reference Bureau.* Washington DC.

Ransom, E.I. and N.V. Yinger. 2002. *Making Motherhood Safer: Overcoming Obstacles on the Pathway to Care.* Washington: Population Reference Bureau.

Rosenstock, I. 1966. "Why People Use Health Services." *Milbank Memorial Fund Quarterly* 44(3, Pt. 2): 99–124.

Salako L.A; W.R Brieger, B.M. Afolabi, R.E. Umeh, P.U. Agomo and S. Asa. 2001. "Treatment of Childhood Fevers and Other Illnesses in Three Rural Nigerian Communities." *Journal of Tropical Pediatrics* 47: 230–8.

Tsuyuoka, R, Y. Wagatsuma and B. Makunike. 2001. "The Knowledge and Practice on Malaria among Community Members in Zimbabwe." *Central African Journal of Medicine* 47: 147.

United Nations. 2000. *Health and Mortality: Selected Aspects. World Population Monitoring*, 1998. New York: United Nations.

UNICEF. 2007. *The State of the World's Children.* New York: UNICEF. Retrieved February 12, 2008. <http//www.unicef.org/publication>.

Wallace, S.J. 1998. *The Child with Febrile Seizures.* London: John Wright.

World Bank 1998. *World Development Indicators.* Washington, D.C: World Bank.

World Health Organization. 2004. *Antenatal Care in Developing Countries: Promises, Achievements and Missed Opportunities: an Analysis of Trends, Levels and Differentials*, 1990-2001. Geneva: WHO.

Yeneneh, H, T.W. Gyorkos, L. Joseph, J. Pickering and S. Tedla. 1993. *Antimalarial Drug Utilization by Women in Ethiopia: A Knowledge, Attitudes and Practice Study.* Bulletin of the World Health Organization 71: 763–72.

Zlidar, V.M., R. Gardner, S.O. Rutstein, L. Morris, H. Goldberg and K. Johnson. 2003. "New Survey Findings: The Reproductive Revolution Continues." *Population Reports* Vol. xxxi(2), Series M, No. 17. Baltimore: Johns Hopkins Bloomberg School of Public Health.

Social Stigma and Quality of Life among Rural-to-Urban Migrants in China: A Comparison with Their Rural Counterparts

James McGuire, PhD, Department of Community Health Sciences, The University of Southern Mississippi, Hattiesburg, MS, USA

Xiaoming Li, PhD, The Carman and Ann Adams Department of Pediatrics, Wayne State University, Detroit, MI, USA

Bo Wang, PhD, Department of Community Health Sciences, The University of Southern Mississippi, Hattiesburg, MS, USA

James McGuire, PhD, Department of Community Health Sciences, the University of Southern Mississippi, 118 College Drive, Box 5122, Hattiesburg, MS 39406, Tel: 601-266-6508, Fax: 601-266-5043, Email: James.McGuire@usm.edu

Abstract

Social stigma has been identified as a major concern in healthcare. Its association with quality of life among migrants is rarely assessed. Using data collected through a cross-sectional survey among 1,006 rural-to-urban migrants and 1,020 rural residents in China, this study examines the experience of stigmatization in relation to four domains of quality of life. Rural-to-urban migrants perceived a higher level of social stigma and a lower level of quality of life than their rural counterparts. Multiple regressions indicated the importance of social stigma in accounting for subjective quality of life for migrants. In addition, personal income, family economic status and health status were positively associated with increased quality of life. Social stigma has a significant influence on quality of life among rural-to-urban migrants in China. Future interventions should seek to improve public attitudes to rural-to-urban migrants and generate action to eliminate stigma, discrimination and prejudice.

Introduction

Quality of life is a broad concept that includes all aspects of life (Guyatt et al. 2007; Hong and Giannakopoulos 1994). It is the personal subjective analysis of the many dimensions of life (Guyatt et al. 2007; Strine et al. 2008), the manner in which they are conducted and internalized (Guyatt et al. 2007; Strine et al. 2008), the value felt for life (Strine et al. 2008, Bandura 1997) and the overall impact on life (Hong and Giannakopoulos 1994; Revicki et al. 2000). Factored into this subjective overview of life are the living conditions encountered on a daily basis, including role functioning (domestic or employed), community and social interactions (Bowling 1991), economic, political and environmental factors (Bowling 1991; Revicki et al. 2000), mental hardiness and general outlook on life (Hong and Giannakopoulos 1994; Bowling 1991). As such, quality of life comprises different components. It includes, at the very least, the physical, mental, emotional, social and spiritual dimensions commonly associated with personal health (Hong and Giannakopoulos 1994; Revicki et al. 2000). However, it also incorporates the more complex areas of life, such as a person's values, judgments and preferences (Crosby et al. 2003), cultural mores (Guyatt et al. 2007), self-efficacy, locus of control, motivation (Bandura 1997) and resource availability (Hong and Giannakopoulos 1994; Bandura 1997).

Quality of life can be explained on a continuum, varying from extremely high to extremely low (Revicki et al. 2000; Gill and Feinstein 1994). It can, therefore, be viewed as negative or positive (Guyatt et al. 2007; Strine et al. 2008; Crosby et al. 2003). A negative quality of life is detrimental to a person's existence and a state that elicits a sense of dissatisfaction (Bowling 1991; Revicki et al. 2000), lack of purpose (Guyatt et al. 2007; Bandura 1997) and general uncertainty (Strine et al. 2008; Bandura 1997). The priority of life, in this case, is to continue living. The more extrinsic comforts of life (higher-level employment, financial security, etc.) are commonly overshadowed by the basic necessities of life (adequate food, shelter, safety). A positive quality of life, however, reflects satisfaction with one's life and the direction in which it is moving. An individual with a perception of life quality as high would live with an understanding that regardless of how destructive world events may be, or how individual hardships create difficulties, life is still viewed as good and prosperous (Hong and Giannakopoulos 1994; Strine et al. 2008; Bandura 1997). It is the feeling that life has a high value and is generally good (Guyatt et al. 2007; Strine et al. 2008; Bandura 1997). It is possessing the social standards that benefit both the self and society (Bandura, 1997).

According to Goffman (1963: 3), social stigma is an "attribute that is deeply discrediting" and a process of devaluation of a person who possesses a deviant attribute. In essence, it is a perception within a society that any variances from the norms in that society are to be closely scrutinized or deemed unacceptable (Harvey 2001; LaBel 2008). Stigmas originate from normative standards that have evolved over time in each established society (Kurzban and Leary 2001; Major and O'Brien 2005). The actual process of stigmatization, then, is having a predetermined negative evaluation of anyone with different attributes (LeBel 2008). The elements of labelling, stereotyping, discrimination, loss of social status (Kurzban and Leary 2001; Mak and Poon et al. 2007), social ostracizing (LeBel, 2008) and fear (Link and Phelan 2001), as well as unfamiliarity with social, political and economic practices among cultures (Major and O'Brien 2005; Shih 2004), constitute the basis of stigmatization.

The impact of stigmatization is vast. Stigmatized groups, when compared with non-stigmatized groups, generally have an increased risk for both mental and physical health problems (Link and Phelan 2001). The cumulative effect of the stress response (physiological, cognitive, emotional and behavioural) stands at the forefront when discussing stigmatization and the long-term impact on a person's health (LeBel 2008). According to Miller and Kaiser (2008), it is the cognitive appraisal (i.e., identifying a situation as serious and threatening, and considering resources available for coping) of the situation that is essential to how the stigmatized person reacts to the associated stress. If this appraisal is negative, results often include lowered self-esteem, social withdrawal (Miller and Kaiser 2008), depression (LeBel 2008), anger, frustration, exclusion (Kurzban and Leary 2001; Smith 2002) and feelings of inferiority (Major and O'Brien 2005). However, there are individuals who may actually thrive in a stigmatizing situation. In this case, individuals look upon being stigmatized as a motivator to accomplishing their task. They use an empowering model of behaviour (i.e., focus on their value, enhance interpersonal skills and increase assertiveness) to deal with the stigmatization rather than a coping model (i.e., constantly adjusting to the adversity). It is living with an internal resiliency to channel energy toward the positive aspects of life and not succumb to the stigmatization (Shih 2004). As related to quality of life, stigmatization creates disadvantages in the many domains of life. Employment, personal relationships, housing (Link and Phelan 2001), self-esteem (Major and O'Brien 2005), healthcare and education (Miller and Kaiser 2001) are all usually negatively impacted by exposure to stigmatization.

Migration is moving from one country, region or place of residence to another location. Migration can create adverse effects. The hardship of moving; feelings of isolation, ridicule and being ostracized in the new setting; and adjusting to the social and economic conditions in the new environment can easily create a life filled with distress and declining mental health for migrants (Bhugra and Becker 2005). In general, migration is a move from the comfortable and routine to a state of unfamiliarity regarding language, societal values, expectations and social support systems. Concomitantly, as these changes occur due to migration, the quality-of-life level for migrants typically diminishes (Bhugra 2004). The long-term effect of the constant stress response steadily reduces the quality of life by reaching the core of bodily functioning.

China has the largest mobile population in the world (Li et al. 2006). There were about 147 million rural-to-urban migrants who work and live in urban areas of China (China National Bureau of Statistics, 2006). As the majority of migrants have not received work skills training and only 13% have completed high school education, they frequently undertake manual labour for goods transportation, construction work, domestic services and restaurant services (Zhang 2001). As droves of rural labourers rush into the cities, job opportunities become saturated and many migrants cannot find the employment they dreamed of (Li 1993; Wang 1995). Rural migrants face significant challenges in cities because they are far from their home village, with inadequate income and the absence of a permanent household registration in their host cities (Anderson et al. 2003). In addition, relocating to a densely inhabited, unfamiliar city requires extensive investments of time to reestablish social networks and may have an impact on the migrant's physical and psychological well-being.

A literature search reveals that few studies have examined quality of life among the migrant population. The current study attempted to fill this research gap by comparing social stigma and quality of life between rural-to-urban migrants and their rural counterparts. We addressed three primary research questions: (1) What is the level of quality of life (QOL) among rural-to-urban migrants compared with their rural counterparts? (2) Do rural-to-urban migrants perceive a higher level of social stigma than their rural counterparts? (3) Is there an association between social stigma and quality of life after controlling for socio-demographic factors? Based on previous research, we hypothesized that a higher level of social stigma would predict a lower perceived quality of life.

Methods

Participants and Sampling Procedures

The data used in this analysis were derived from a larger comparative study on mental health among Chinese populations (Li et al. 2009). There are two samples of participants in this study. The migrant sample ($N = 1006$) was recruited in Beijing and the rural sample ($N = 1020$) was recruited from eight provinces from which 75% of the migrant sample originated. Beijing is the capital city of China, with a permanent population of 13 million. According to government statistics, there were more than 3 million rural-to-urban migrants (69% males and 31% females) in Beijing in 2003, the majority between 18 and 40 years of age (Beijing Bureau of Statistics 2003).

The rural-to-urban migrant sample was recruited in 2004–2005 in Beijing, China, using the occupational cluster-based "quota sampling" scheme to ensure the representative nature of the migrant sample (Li et al. 2004). According to 2003 government statistics of migrant employment, five occupational clusters employed 82% of rural-to-urban migrants in Beijing (i.e., construction, hotel and restaurant, wholesale and retail, manufacturing, and domestic service and other service sectors).These five occupational clusters were selected as the sampling frame for rural-to-urban migrants in the current study. The number of participants recruited in each occupational cluster was approximately proportionate to the overall estimated distribution of migrants in the cluster. In addition, the sampling was also stratified by gender to match the overall gender distribution of the migrant population in Beijing. Eligibility criteria for participation in the study included: (1) between 18 and 40 years of age; (2) born in a rural area and registered as a permanent rural resident; (3) worked in Beijing without a permanent Beijing residence; and (4) had been physically present in Beijing for at least one month. The local research teams used workplaces (store, shop, club, office, factory, construction site) as the sampling units. Streets were used as the sampling units for migrants who did not have fixed workplaces (such as repairmen, street vendors). Once a sampling unit was identified and selected according to the pre-established sampling scheme, employers (or managers) at the sampling unit were contacted for permission to conduct the survey on their premises. Upon receiving permission, the interviewers randomly approached eligible rural-to-urban migrants at the sampling unit. This process was repeated until target numbers of sampling units or numbers of participants in each sampling stratum were reached. To prevent over-sampling of migrants from any single sampling unit, the number of migrants recruited from any unit was limited to 50. This sampling process yielded a final sample of 1006 rural-to-urban migrant workers from 34 sampling units. These sampling units, stratified by occupational cluster, were spread across 10 large geographic locations (e.g., downtown areas, business districts, major streets and suburban townships) in two central urban districts, two “near” suburban districts and two “outer” suburban districts/counties in Beijing.

Rural residents were recruited using multiple-stage cluster sampling. Once the migrant sample was recruited, their home provinces of origin were tallied. While the migrant sample in the current study originated from 25 provinces across mainland China, 75% of the sample came from eight provinces (Hebei, Henan, Sichuan, Jiangsu, Anhui, Shangdong, Hubei and Hunan). These provinces were selected as the first sampling stratum for the rural residents. The proportion of rural residents recruited from each province was set to be approximately equal to that of the migrant sample that originated from the same province. The county within each province served as the second sampling stratum. A total of 34 counties were selected from these eight provinces (range from one to 11 counties per province with an average of 4.25 counties per province). The rural village within each county served as the third sampling stratum. A total of 63 villages were selected from the 34 counties (range from one to four villages with an average of 1.85 villages per county). Outreach strategies employed to identify counties/villages included referrals from local government or direct personal contacts with village leaders. Once permission was granted by the village leaders to conduct the survey in their areas, the research team randomly approached rural residents in villages. Rural residents were eligible to participate if they (1) lived in a rural area with permanent rural residency; (2) had stayed in the hometown for at least one month; and (3) were between 18 and 40 years of age. To prevent over-sampling of rural residents from any village, the number of rural residents recruited from any village was capped at 30.

Survey Procedures

Once an eligible individual was identified in a sampling unit, trained interviewers provided the individual with a detailed description of the study design and the consenting procedure and invited her or him to participate in the survey. Eligible individuals who agreed to participate and provided informed consent were asked to complete a self-administered questionnaire. Similar questionnaires (except for some minor differences in the demographic section) were used for rural-to-urban migrants and rural residents. Questionnaires were pilot-tested for comprehension and appropriateness of language prior to administration. A questionnaire typically took about 45 minutes to complete. Participants completed it individually or in a small group (3 to 5 people) at workplaces, homes or other locations they preferred. Participants were paid the equivalent of 4 US dollars for their participation. The study protocol was approved by the Institutional Review Boards at Wayne State University in the United States and Beijing Normal University in China.

Measures

Demographic characteristics. Participants' age, sex, ethnicity, education level (i.e., illiterate, elementary school, junior high school, high/technical school, college or above) and marital status (i.e., never married, married, divorced, remarried and widowed) were collected. Information was also collected regarding monthly income and family economic status (i.e., rich, general, poor and very poor). In bivariate or multivariate analysis, responses were grouped into three categories for education (elementary school or below, junior high school and senior high school or above) and marital status (never married and ever married). Because only 3% of participants were of non-Han ethnicity, these ethnic groups were collapsed into a single category (i.e., non-Han). Participants were also asked to self-rate their overall health status on a 5-point scale (very poor, poor, fair, good and very good). Due to the low frequency in "very poor" and "poor" categories, the response was grouped into four categories: poor (very poor/poor), fair, good and very good, with a higher score indicating a better health status.

Social stigma. The questionnaire contains 18 items to measure social stigma encountered by participants during their work and life (e.g., I am viewed negatively by mainstream society; I feel that society views me as an inferior being). These items were adapted from a published stigmatization scale (Harvey 2001). All items were presented on a 4-point Likert scale (1 = "strongly disagree" to 4 = "strongly agree"). Three subscales were created with 17 items retained through running exploratory factor analysis: discrimination, prejudice and exclusion; internal consistency (Cronbach alpha) was 0.80,[1] 0.79 and 0.52, respectively.

Quality of life. Quality of life was measured by the abbreviated version of the WHOQOL assessment (The WHOQOL Group 1998), a self-report scale consisting of 26 items divided into four subscales including physical health, psychological health, social relationships and environment. All items were presented on a 5-point Likert scale (1 = "very unsatisfied" to 5 = "very satisfied"). The internal consistency for physical health, psychological health, social relationships and environment was 0.68, 0.73, 0.62 and 0.78, respectively.

Analysis

First, descriptive statistics were calculated for socio-demographic variables, social stigma and quality of life (QOL). The differences of these variables between rural-to-urban migrants and their rural counterparts were tested using chi-square (for categorical variables) or analysis of variance (for continuous variables).

Second, QOL was categorized into three classes: low, medium and high. Bivariate association of QOL with socio-demographic variables and social stigma was examined using chi-square (for categorical variables including gender, ethnicity, education, marital status, family economic status and health status) and ANOVA (for continuous variables including age, social stigma and monthly income). An exploratory factor analysis was used to extract distinct factors for the social stigma scale.

Third, multiple linear regression analysis was performed to examine the combined effects of socio-demographic variables and social stigma on QOL. This analysis is used to estimate the relationship between a continuous dependent variable and a set of explanatory variables. An important advantage of this analysis is that we can compare standardized coefficients to assess the relative strength of each predictor. The dependent variables of multiple regression analysis were QOL score. Variables identified as significantly associated with the dependent variables at $p < .05$ in the bivariate analyses were included in the model. Standardized coefficients were calculated. All statistical analyses were performed using the SAS 9.1.3 statistical software package (SAS Institute Inc., Cary, NC).

---

[1] Cronbach alpha is one of the most commonly reported reliability estimates. It is used to estimate the proportion of variance that is systematic or consistent in a set of test scores. For example, a Cronbach alpha of 0.80 means that the measure of discrimination is 80% reliable.

Results

Socio-demographic Characteristics

Data on 1006 migrants and 1020 rural residents were collected in 2004–2005. The socio-demographic characteristics of participants are shown in Table 1. The mean age of the sample was about 27 years (range 18–40 years). Nearly two thirds of participants were male. The majority were of Han ethnicity (96.9%). Seventy-two percent of participants had received no more than a junior high school education. Nearly half had never been married. The average monthly income was 790.8 Yuan, equivalent to 100 US dollars at the time of survey. Only 5% of participants reported that their family was rich. More than two thirds said their health status was very good or good.

Table 1. Demographic characteristic of Chinese rural-to-urban migrants and their rural counterparts

Variables	Overall ($n = 2026$)	Migrants ($n = 1006$)	Rural residents ($n = 1020$)	p
Age	27.1 (6.5)	25.4(6.2)	28.8 (6.4)	< .0001
Sex				
Male	64.0%	33.1%	38.8%	.0081
Female	36.0%	66.9%	61.2%	
Ethnicity				
Han	96.9%	96.5%	97.4%	.2616
Non-Han	3.1%	3.5%	2.6%	
Education[†]				
Elementary school or below	15.1%	10.2%	20.1%	.0004
Junior high school	57.0%	61.8%	52.2%	
Senior high school or above	27.9%	28.0%	27.8%	
Marital status				
Never married	45.5%	61.3%	29.9%	< .0001
Married or divorced	54.5%	38.7%	70.1%	
Family economic status[a]				
Rich	4.7%	3.6%	5.8%	.0216
Middle class	80.8%	80.8%	80.7%	
Poor or very poor	14.5%	15.6%	13.5%	
Monthly income (Yuan)	790.8 (618.8)	979.6 (703.4)	604.0 (449.9)	< .0001
Health status[a]				
Very good	33.6%	36.5%	30.8%	.0472
Good	36.8%	35.1%	38.5%	
Fair	25.7%	24.3%	27.1%	
Poor or very poor	3.9%	4.1%	3.7%	

Note. Numbers in parenthesis are standard deviations.

[a] Cochran-Mantel-Haenszel statistics.

Compared with their rural counterparts, rural-to-urban migrants were younger and had received more education. Higher proportions of migrants than their rural counterparts had never been married (61.3% vs. 29.9%, $p < .001$) and reported that their family was poor or very poor (15.6% vs. 13.5%, $p < .05$). Higher proportions of migrants were female (66.9% vs. 61.2%, $p < .01$) and considered that their health status was very good (36.5% vs. 30.8%, $p < .05$) compared with rural residents. Migrants had a higher monthly income than rural residents (703.4 vs. 449.9 Yuan) (Table 1).

Social Stigma and Quality of Life

The average social-stigma scores for all the participants were 12.1 (discrimination), 14.6 (prejudice) and 8.0 (exclusion). There was a significant difference in total social stigma score between migrants and their rural counterparts. Migrants scored higher than rural residents (35.5 vs. 33.6, $p < .001$). In addition, there were significant differences in two of three domains of social stigma between migrants and rural residents (Table 2).

The average QOL scores for all the participants were 26.0 (physical health), 20.4 (psychological health), 10.7 (social relationship) and 23.7 (environment). There was significant difference in total QOL score between migrants and their rural counterparts; migrants scored lower than rural residents (79.2 vs. 81.9, $p < .001$). In addition, there were significant differences in four domains of QOL between migrants and rural residents (Table 2).

Association between Social Stigma and Quality of Life

Table 3 depicts bivariate association of QOL with demographic variables and social stigma. Social stigma and its three domains were negatively associated with QOL. Personal income, education, family economic status and health status were positively associated with QOL. Female participants reported a higher level of QOL than males. In addition, age, ethnicity and marital status were not associated with QOL.

To further examine how social stigma and social-demographic factors are associated with QOL simultaneously, we performed multivariate regression analyses. As shown in Table 4, social stigma was negatively associated with increased QOL. The multiple linear regression analysis confirmed the bivariate analysis (Table 3) that personal income, family economic status and health status were positively associated with increased QOL. Furthermore, residential status was significantly associated with QOL. Migratory status was negatively associated with increased QOL. The variables most strongly associated with QOL were social stigma and health status. The results of multiple linear regression analysis indicated that one unit increase in social stigma score resulted in a decrease of 0.36 in QOL score, and one unit increase in health status resulted in an increase of 0.29 in QOL score (standardized coefficients were -0.36 and 0.29, respectively), assuming that other sociodemographic variables held constant. In addition, age, sex and education were not significant predictors of QOL in the final model.

Discussion

Data in the present study confirm and expand the findings from earlier studies. Consistent with the literature, our results provide strong evidence in favour of our hypothesis that social stigma is negatively associated with quality of life (Major and O'Brien 2005; LeBel 2008; Link and Phelan 2001). Social stigma may impact migrants' quality of life through its negative effects on employment, housing, self-esteem, health care, self-efficacy and mental health (Major and O'Brien 2005; Miller 2001; Ghazinour et al. 2004). In addition, our results suggest that rural-to-urban migrants experienced a higher level of social stigma in the urban areas and perceived a lower level of quality of life than their counterparts who live in rural areas.

Inconsistent with prevailing findings in the literature (Bonicatto et al. 2001; Sabbah et al. 2003), we found in our stratified analysis (i.e., within migrants) that male migrants on average perceived a higher level of social stigma in urban areas than female migrants. Furthermore, male migrants reported a significantly poorer quality of life. This confirms previous studies concerning the association between depression and quality of life (Bonicatto et al. 2001). One reason for this gender difference in social stigma might be due to the fact that men usually take major responsibility for all aspects of their family in China and are more likely to be discriminated against by urban dwellers and communities through their contacts in search for jobs and other social activities. Therefore, their chances of being stigmatized increase compared with those of women.

Table 2. Social stigma and quality of life among migrants and their rural counterparts

Variable	Overall	Migrants	Rural residents	*p*
Social stigma				
Discrimination	12.1 (4.2)	12.6 (4.3)	11.6 (3.9)	.0001
Prejudice	14.6 (4.6)	15.1 (4.7)	14.1 (4.4)	.0001
Exclusion	8.0 (2.4)	8.0 (2.5)	8.1 (2.4)	.4034
Total score	34.6 (8.3)	35.5 (8.4)	33.6 (8.2)	.0001
Quality of life				
Physical health	26.0 (3.7)	25.5 (3.7)	26.4 (3.7)	.0001
Psychological health	20.4 (3.5)	20.2 (3.6)	20.7 (3.3)	.0028
Social relationship	10.7 (2.1)	10.4 (2.2)	11.0 (1.9)	.0001
Environment	23.7 (5.0)	23.2 (5.3)	24.1 (4.8)	.0003
Total	80.6 (11.6)	79.2 (12.2)	81.9 (10.8)	.0001

Note. Numbers in parenthesis are standard deviations.

Consistent with previous research (Li et al. 2006), our study found that migrants perceived or experienced a higher level of social stigma in the urban areas than their counterparts who live in rural areas. Migrants are stigmatized in cities because of their attributes (e.g., dressing, talking, local accent and farmer habits) (Bhugra 2004; Li et al. 2006). Data from the current study suggest that rural-to-urban migrants perceived lower quality of life than their rural counterparts, after adjusting for potential socio-demographic confounders. Migrants typically leave their homes to improve their economic status and increase their life opportunities in urban areas. However, most of them had received no more than a high-school education. Finding a job and living in an unfamiliar place along with the experience of social stigma and discrimination generates stress, which further affects their quality of life.

Previous studies have shown that personal income and family economic status are positively associated with QOL (Li et al. 2007). Data in the present study indicate that migrants make more money in urban areas than their rural counterparts. However, migrants perceived a lower level of QOL. This may be because migrants' perceived social stigma overwhelms the effects of a relatively small income increase on QOL. Despite stigma and discrimination, most migrant workers in China and their families are financially better off than they had been pre-migration (Li et al. 2006). Migrants' economic gains may mitigate the effects of stigmatization and migrants may choose to stay and work in urban areas. Education is not associated with QOL in this study, perhaps because of the small variation of education (most migrants had received no more than a high-school education). Although data in the present study indicate that QOL is not associated with sex, age and marital status, these relationships need further examination in future studies.

Table 3. Bivariate association of quality of life with demographic variables and social stigma

Variable	Level of quality of life			*f* & χ^2	*p*
	Low (1) (score 33–75)	Medium (2) (score 76–85)	High (3) (Score 86–117)		
Social stigma					
Total score	39.3 (7.6)	34.6 (7.7)	31.0 (7.7)	144.2	.0001
Discrimination	14.0 (3.8)	12.2 (4.0)	10.7 (4.1)	88.2	.0001
Prejudice	16.9 (4.4)	14.4 (4.3)	13.0 (4.3)	109.7	.0001
Exclusion	8.6 (2.3)	8.1 (2.4)	7.5 (2.4)	25.5	.0001
Age	27.4 (6.5)	28.2 (6.6)	27.7 (6.4)	2.2	.1160
Monthly income (Yuan)	748.3 (486.1)	802.2 (612.8)	848.1 (798.4)	3.3	.0375
Gender					
Female	28.6%	37.8%	34.9%	10.7	.0047
Male	71.4%	62.2%	65.1%		
Ethnicity					
Han	98.1%	96.9%	96.5%	3.0	.2251
Non-Han	1.9%	3.1%	3.5%		
Education[a]					
Elementary school or below	20.8%	15.5%	12.3%	12.2	.0005
Junior high school	55.2%	58.1%	58.6%		
Senior high school or above	24.0%	26.4%	29.1%		
Marital status					
Never married	44.2%	34.6%	39.6%	2.3	.1265
Married or divorced	55.8%	65.4%	60.4%		
Family economic status[a]					
Rich	3.0%	4.6%	6.7%	37.6	.0001
Middle class	74.5%	84.8%	83.0%		
Poor or very poor	22.5%	10.6%	10.3%		
Health status[a]					
Very good	19.8%	30.6%	47.4%	156.2	.0001
Good	34.9%	36.0%	38.4%		
Fair	37.7%	30.3%	13.2%		
Poor or very poor	7.6%	3.1%	1.1%		

Note. Numbers in parenthesis are standard deviations.

[a] Cochran-Mantel-Haenszel statistics.

Table 4. Multiple linear regression model of quality of life among rural-to-urban migrants

Variables	Un-standardized coefficient		Standardized coefficient	
	β	SE	*p*	β
Social stigma	-0.49	0.03	< .0001	-0.36
Residential status (migrants vs. rural residents)	2.67	0.58	< .0001	0.12
Age	-0.06	0.04	.1864	-0.03
Gender (female vs. male)	-0.49	0.56	.3856	-0.02
Education	-0.58	0.42	.1699	-0.03
Monthly income	0.18	0.04	< .0001	0.11
Family economic status (Poor = 1 to rich = 3)	2.66	0.64	< .0001	0.10
Health status (poor = 1 to very good = 4)	3.96	0.32	< .0001	0.29

Note. Dependent variable is quality-of-life score; Model fit $f = 74.9$, $p < .0001$ and $R^2 = 0.30$.

There are potential limitations in this study. First, despite efforts to ensure the representativeness and comparability of the samples, our study sample remains a convenience sample of rural-to-urban migrants and rural residents, which limits the generalization of findings to migrants and their rural counterparts from other areas of China. Second, cross-sectional data in the current study prevent causal interpretation of the findings. Longitudinal research is needed to explore the causal relationship between social stigma and quality of life. Third, because quality of life in various life domains was assessed with a self-report questionnaire, there may be recall bias in this study. Fourth, one subscale of social stigma had low internal consistency estimates (Cronbach alpha 0.52). Future studies are needed to develop more reliable psychometrical measures of this construct to improve the internal validity of the findings. Finally, some individual, interpersonal and community factors (e.g., coping resources, social support) that may contribute to differences in QOL between the two populations were not included, and this may limit our ability to interpret the findings.

Notwithstanding these potential limitations, this study represents one of the first efforts to examine QOL among rural-to-urban migrants using validated scales among community-based samples in China. The results from this study have significant implications for health promotion programs to improve the quality of life of rural-to-urban migrants. First, migrants have made a major contribution to China's industrial development and economic growth in the past decades. However, their contributions are not well recognized by the society. They are frequently marginalized in urban areas and are targets of discrimination (Li et al. 2007). Future interventions should seek to improve public attitudes to rural-to-urban migrants and generate action to eliminate stigma, discrimination and prejudice. Second, future research is needed to identify individual characteristics that are associated with increased social stigma among rural-to-urban migrants in order to develop effective stigma-reduction strategies. Finally, pre-migratory training with a focus on establishment of effective coping skills may help migrants to overcome negative consequences of stigma and to live healthy, productive lives.

Acknowledgement

This research was supported by NIH Research Grant (#R21TW006375) funded by the Fogarty International Center and the National Institute of Mental Health. The authors wish to thank dedicated students and faculty members from Beijing Normal University for their contributions to the data collection.

References

Anderson, A.F., Z. Qingsi, X. Hua and B. Jianfeng. 2003. "China's Floating Population and the Potential for HIV Transmission: A Social-Behavioural Perspective." *AIDS Care* 15(2): 177–85.

Bandura, A. 1997. *Self-efficacy: The Exercise of Control.* New York: W.H. Freeman and Company.

Beijing Bureau of Statistics. 2003. *Reports on 5th Census in Beijing.*

Bhugra, D. and M.A. Becker. 2005. "Migration, Cultural Bereavement and Cultural Identity." *World Psychiatry* 4(1): 18–24.

Bhugra, D. 2004. "Migration Distress and Cultural Identity." *British Medical Bulletin* 69: 129–41.

Bonicatto, S.C., M.A. Dew, R. Zaratiegui, L. Lorenzo and P. Pecina. 2001. "Adult Outpatients with Depression: Worse Quality of Life Than in Other Chronic Medical Diseases in Argentina." *Social Science & Medicine* 52(6): 911–9.

Bowling, A. 1991. *Measuring Health – A Review of Quality of Life Measurement Scales.* Milton Keynes: Open University Press.

China National Bureau of Statistics (2006). Communiqué on major data of 1% National Population Sample Survey in 2005 [Retrieved October 21, 2006, from http://www.stats.gov.cn/eNgliSH/newsandcomingevents/t20060322_402312182.htm

Crosby, R.D., R.L. Kolotkin and G.R. Williams. 2003. "Defining Clinically Meaningful Change in Health-Related Quality of Life." *Journal of Clinical Epidemiology* 56: 395–407.

Ghazinour, M., J. Richter and M. Eisemann. 2004. "Quality of Life among Iranian Refugees Resettled in Sweden." *Journal of Immigrant Health* 6(2):71-81.

Gill, T.M. and A.R. Feinstein. 1994. "A Critical Appraisal of the Quality of Quality-of-Life Measurements." *The Journal of the American Medical Association* 272: 619–26.

Goffman, E. 1963. *Stigma.* Englewood Cliffs, New Jersey: Prentice-Hall.

Guyatt, G.H., C.E. Ferrans, M.Y. Halyard, D.A. Revicki, T.L. Symonds, C.G. Varricchio, A. Kotzeva, J.M. Valderas and J. Alonso. 2007. "Exploration of the Value of Health-Related Quality of Life Information from Clinical Research and into Clinical Practice." *Mayo Clinic Proceedings* 82(10): 1229–39.

Harvey, R.D. 2001. "Individual Differences in the Phenomenological Impact of Social Stigma." *The Journal of Social Psychology* 141(2): 174–89.

Hong, S.M. and E. Giannakopoulos. 1994. "The Relationship of Satisfaction with Life to Personality Characteristics." *The Journal of Psychology* 128: 547–58.

Kurzban, R. and M.R. Leary. 2001. "Evolutionary Origins of Stigmatization: the Functions of Social Exclusion." *Psychological Bulletin* 127(2): 187–208.

LeBel, T.P. 2008. "Perceptions of and Responses to Stigma." *Sociology Compass* 2(2): 409–32.

Li, L., H.M. Wang, X.J. Ye, M.M. Jiang, Q.Y. Lou and T. Hesketh. 2007. "The Mental Health Status of Chinese Rural-Urban Migrant Workers: Comparison with Permanent Urban and Rural Dwellers." *Social Psychiatry and Psychiatric Epidemiology* 42(9): 716–22.

Li, S.X. 1993. "Floating Population and Health Care." *Chinese Journal of Health Administration* 1: 15–7.

Li, X., X. Fang, D. Lin, R. Mao, J. Wang, L. Cottrell, C. Harris and B. Stanton. 2004. "HIV/STD Risk Behaviors and Perceptions among Rural-to-Urban Migrants in China." *AIDS Education and Prevention* 16(6): 538–56.

Li, X., B. Stanton, X. Fang and D. Lin. 2006. "Social Stigma and Mental Health among Rural-to-Urban Migrants in China: A Conceptual Framework and Future Research Needs." *World Health & Population* 8(3): 14–31.

Li, X., B. Stanton, X. Fang, Q. Xiong, S. Yu, D. Lin, Y. Hong, L. Zhang, X. Chen and B. Wang. 2009. "Mental Health Symptoms among Rural-to-Urban Migrants in China: A Comparison with Their Urban and Rural Counterparts." *World Health & Population* 11(1): 24–38.

Link, B.G. and J.C. Phelan. 2001. "Conceptualizing Stigma." *Annual Reviews in Sociology* 27: 363–85.

Major, B. and L.T. O'Brien. 2005 "The Social Psychology of Stigma." *Annual Review of Psychology* 56: 393–421.

Mak, W.S., C. Poon, L. Pun and S.F. Cheung. 2007. "Meta-Analysis of Stigma and Mental Health." *Social Science & Medicine* 65: 245–61.

Miller, C.T. and C.R. Kaiser. 2001. "A Theoretical Perspective on Coping with Stigma." *The Journal of Social Issues* 57(1): 73–92.

Revicki, D.A., D. Osoba, D. Fairclough, I. Barofsky, R. Berzon, N.K. Leidy and M. Rothman. 2000. "Recommendations on Health-Related Quality of Life Research to Support Labeling and Promotional Claims in the United States." *Quality of Life Research* 9: 887–900.

Sabbah, I., N. Drouby, S. Sabbah, N. Retel-Rude and M. Mercier. 2003. "Quality of Life in Rural and Urban Populations in Lebanon Using SF-36 Health Survey." *Health and Quality of Life Outcomes* 1: 30.

Shih, M. 2004. "Positive Stigma: Examining Resilience and Empowerment in Overcoming Stigma." *The Annals of American Academy of Political & Social Science* 591: 175–85.

Smith, M. 2002. "Stigma." *Advances in Psychiatric Treatment* 8: 317–23.

Strine, T.W., D.P. Chapman, L.S. Balluz, D.G. Moriarty and A.H. Mokdad. 2008. "The Associations Between Life Satisfaction and Health-Related Quality of Life, Chronic Illness, and Health Behaviors among US Community-Dwelling Adults." *Journal of Community Health* 33: 40–50.

The WHOQOL Group. 1998. "Development of the World Health Organization WHOQOL-BREF Quality of Life Assessment." *Psychological Medicine* 28: 551–8.

Wang, W.D., W.Z. Le and X.J. Zuo. 1995. *Floating Population in Shanghai in 1990's.* Shanghai: East China Normal University Press.

Zhang, L. 2001. *Strangers in the City: Reconfigurations of Space, Power and Social Networks Within China's Floating Population.* Stanford, CA: Stanford University Press.

Commentary

Lutchmie Narine, PhD
Chair, Department of Health and Wellness
Associate Dean for Research
College of Human Ecology
Syracuse University

The essay by Carlos Zubaran titled "Human Nomenclature: From Race to Racism" provides an excellent summary and synthesis of the extant literature on use of racial categories to explain differences in disease patterns among population groups. The author does a commendable job of tracing the historical literature and conversations of the role of race and its genetic underpinnings that has become a part of the current discourse to categorize human beings. Zubaran also marshals significant supporting evidence from the literature to argue against a biological definition based on genetics to explain racial health disparities. He correctly emphasizes that the use of racial categorization in health disparities research is unwise not only because there is little biological evidence for it, but also on ethical and social justice grounds. He highlights historical examples of the use of racial and genetic explanations for health disparities, and warns readers of the potential for discrimination at the individual level and even stigmatization of whole communities and groups. In addition, he correctly points out that the use of racial categorizations in healthcare research can be misleading, resulting in the exclusion of more meaningful social or environmental factors that better explain differences in health status among groups of people.

Often in the face of these shortcomings, health researchers may seek to use racial categories as social constructs, but even here Zubaran suggests caution, arguing that "race as a social construct is insufficient to justify its perpetuation as a categorical and differential entity for humans." He recognizes the need to move from merely warning of the pitfalls of racial categorization to thinking about how race and disease might be more meaningfully addressed in health disparities research. To this end, he suggests the need to redirect the discussion to etic and emic approaches when studying health and disease patterns. Etic approaches force researchers to move beyond discussions of racial health disparities and look for health patterns that cut across racial groups. Emic approaches help health researchers examine variations in health practices and behaviours within racial categories, an approach that will be key in addressing stereotypes and myths on issues of health. The question is not which of these approaches will help us understand health patterns, but rather the merging of information from studies using one or both approaches that will help advance health research in the future.

In our efforts to move beyond racial categorization in understanding health disparities, it is important not to ignore the challenges and experiences of particular racial or ethnic groups who may experience historically significantly worse health outcomes than others because of racial segregation and discrimination. Clearly, more needs to be done in terms of conceptualization, operationalization and methodology when addressing cross-cultural issues of health. Nevertheless, Zubaran's essay offers much food for thought: the issue of health disparities remains a troubling problem, not only in the developed world as it deals with increasing diversity in its population, but also in the developing world, which has its own problems of divisions along gradations of colour or tribal and factional lines.

Human Nomenclature: From Race to Racism

Carlos Zubaran, School of Medicine, University of Western Sydney and Sydney West Area Health Service, Australia

Carlos Zubaran, MD, PhD, Department of Psychiatry, Blacktown Hospital, PO Box 6010, NSW 2148, Tel. +61 02 98818000, Email. zubaran_jr@yahoo.com, Fax. +61 02 9881 8624

Abstract

Throughout time, evolutionary biologists have attempted to classify human beings according to a nomenclature based on supposed patterns of biological differences that have been used to suggest hierarchical categories. Recent genetic evidence disproves the assumption that races are genetically distinct human populations. Several studies refute human categorization as a severely flawed yardstick. For many, *race* is a construct that must be overcome in order to eradicate racism. Personal experiences of racism, harassment and discrimination are associated with multiple indicators of poorer physical and mental health status. Additionally, socio-economic differentials are likely to be a fundamental explanation for the observed inequalities in health status among minority groups. This commentary examines the discrepancies that race, ethnicity and similar human nomenclatures present. Furthermore, the potentially harmful consequences of the "scientific" use of race, in the form of stereotyping and racism, are discussed.

Introduction

A widely noticed op-ed in a recent edition of *The New York Times* declared that "the recognition that [human] races are real should have several benefits" (Leroi 2005: A23). In a subsequent article, an emeritus professor at Harvard University criticized what he considered a rebirth of an old and fallacious claim that maintains the extant confusion about racial categories and recent flawed conclusions about the relevance of race for medical practice (Lewontin 2005). In his article, the latter author reiterates that the largest amount of human variation, about 85%, occurs among individuals encompassed within geographical or linguistic boundaries and that a small number of still unidentified genetic traits that determine appearance characteristics, such as skin colour, hair form and nose shape, vary together (co-variation).

Despite the political pressure and the coincidence of cultural and societal stratification to reify and maintain race as a human classification, the classical definition of race is considered a prejudiced description of human variation. The maintenance of race categories as a valid classification expedient for humans minimizes the essential significance of socio-economic, cultural and psychological explanations for different health standards observed across distinct population groups. The insidious popularity of ethnicity as a new categorical scheme comes into view not as a satisfactory alternative but as the making of another distorted surrogate doomed to perpetuate a similar stereotypical divide, which ultimately facilitates discrimination and stigma.

This commentary examines the discrepancies that race, ethnicity and related terms convey. A series of considerations on the use and effects of conventional classifications of race and ethnicity is presented. Furthermore, the potentially harmful consequences of the use of the term *race*, in the form of stereotyping and racism, are discussed. It is expected that this initial foray might help to define researchable problems and foster debate to promote essential advancement in this arena.

Human Categorization: The Path to Ethnicity

Historically, the fountainhead of human classification does not originate from scientific sources. During the apogee of the ancient world empires – Egyptian, Greek and Roman – people with different language, cultural characteristics and traits were encompassed within a political structure, regardless of their physical variation, and no significant social meanings were attached to their physical differences (Blakely 1993; Fryer 1984). Religion and language were the most important criteria of identity during the Middle Ages and until the seventeenth century (Hannaford 1996).

During the exploratory circumnavigations in pre-Darwinian times, the observed human differences were credited to divine creation (American Anthropological Association [AAA] 2003). The clash between European colonists and captive Africans and American natives in the New World facilitated a divide along appearance and racial distinction. The term *race* possibly originates from the ancient French word rasse and the Italian word *razza*, and when it started being used for differentiating human populations according to appearance has not been determined (Sarich and Miele 2004).

In 1735, Carolus Linnaeus published the *Systema Naturae*, in which he classified the human species into four groups based in physical features and geographic ancestry: Homo European, Homo African, Homo Asiatic and Homo American (Linnaeus 1758). Human taxonomy was later expanded by Blumenbach to five different groups: Caucasian, Mongolian, Ethiopian, American and Malay (Blumenbach 1775). During the eighteenth and nineteenth centuries, academics endeavoured to quantify the differences among races by measuring heads and other parts of the human body (Haller 1971; Smedley 1999b). By the end of nineteenth and the early twentieth centuries, developing tests to measure brain function and intelligence became the dominant interest of scientists who were looking for ways of documenting racial differences, mainly between "Blacks" and "Whites" (Smedley and Smedley 2005). The legacy of these theories is still perceived as highly consequential (Bhopal 2002a).

Yet an alternative scientific discourse started to take form when Darwin proposed an evolutionary framework to explain human variation in *On the Origin of Species* (Darwin 1859). Anthropologists, led by Franz Boas, began to challenge the view of race by 1890 by proposing typologies based on language and culture as well (Shields et al. 2004). By 1900, there was no consensus on the definition of race, since before Mendel's theory, race and additional group differences were conceived as heritable and accumulated cultural differences carried in the blood (Stocking 1994). In the late 1930s, Ashley Montagu claimed that race was a biological myth (Ashley Montagu 1942). During the post–World War II period, biologists moved from concepts of "race as a type" (a static entity) to "race as a population," which is tantamount to groups continually changing genetic composition as result of evolutionary forces of drift, migration and selection (Stepan 1982).

The concept of race was initially applied in the eighteenth century as an arbitrary classification and extended to humans a taxonomic classification (Senior and Bhopal 1994). The biological concept of race was dominant until its decline with the collapse of Nazi racism (Bhopal and Donaldson 1998). Lately, a paradigm shift has started to take place, after genetic studies demonstrated that individuals from the same racial group are about as different from each other as individuals from any two distinct racial groups (AAA 2003).

The concept of ethnicity is gradually supplanting the concept of race (Senior and Bhopal 1994). Yet these are dissimilar concepts in that race is customarily recognized by physical manifestations and has no intrinsic association with cultural patterns, whereas ethnicity refers to unconstrained association with a particular group of people and internalized values that may influence behaviour and social expression (Helms 1996). The word *ethnic* is derived from the Greek *ethnikos*, meaning race or nation, and it was originally used to refer to nations not converted to Christianity (Yankauer 1987). Ethnicity tends to designate a group of people with common cultural traits, including language, geographic identifiers, religious and historic characteristics, tradition, values, beliefs and food habits that distinguish them from others (Jones 1997; Parrilo 1997; Smedley 1999b).

Biology and Genes

Scientific advancement in human biology and genetics, as well as in the social sciences, has spurred a consequential and progressive change of the human classification system. Several studies have refuted human classifications as severely flawed (Gould 1981). Differences in skin colour are fallacious indicators of biological differences among populations (Parra et al. 2004) and race, whether imposed or self-identified, is a weak surrogate for genetic and non-genetic factors associated with health status (Royal and Dunston 2004).

Current genetic data reject the notion that purportedly different races genetically constitute distinct human populations. Studies developed during the last decade provide evidence that there is no connection between self-identified race or ethnicity and frequency of particular genetic variants (Angier 2000; Marshall 1998). The low level of genetic variability and structuring of the human species is incompatible with the existence of race as a biological entity (Pena 2005).

Modern *Homo sapiens* developed in Africa about 200,000 years ago, and spread around the world and diversified approximately 50,000 to 100,000 years ago. Human migrations generated an accumulation of random genetic drift at polymorphic sites in the genome, the reason why allele frequencies usually show gradual modifications throughout different global regions (Bonham et al. 2005). These diverse allele frequencies do not denote that different races exist, but only "that different parts of a continuum have been sampled" (Sternberg et al. 2005: 55). Several authors advocate that the collection of individuals according to continent of origin based on patterns of allelic frequency does not validate the claim of genetically defined races (Haga and Venter 2003).

As we approach the conclusion of the Human Genome Project, the scientific evidence indicates that any two human individuals are about 99.9% the same, genetically. The remaining 0.1% represents approximately three million differences between individuals' DNA, and only a small fraction of these differences are responsible for variations in health, behaviour and other human characteristics (Cargill et al. 1999; Halushka et al. 1999). Furthermore, the greater part of phenotypic traits (including pharmacogenetic variability and non-genetic factors) results from a complex interaction between genetic and non-genetic factors (Goldstein et al. 2003; King et al. 1992).

A recent issue of *Nature Genetics* specifically focused on human genome variation and race. An initial caveat alerts the reader that, in spite of the attempts of the US Census Bureau to expand the definitions of race, humans are much more than a plain sum of genes and that simplistic concepts of "race" are "bad medicine" and "bad science" (Patrinos 2004: S2). As a result of the ample human migratory movements, a significant genetic flow has occurred, precluding the notion of genetic "purity" and definite boundaries between individuals or populations ("races") (Jorde and Wooding 2004). In addition, genetic variations tend to be shared among populations (Jorde and Wooding 2004) and innumerable individuals have ancestors from multiple regions of the world (Collins 2004). Thus, racial classifications do not adequately describe the distribution of genetic variation in humans (Tishkoff and Kidd 2004).

Altogether, there is an excessive emphasis on genetics as a foremost explanatory element for health disparities, as these discrepancies derive primarily from differences in a myriad of factors, including culture, diet, socio-economic status, education and additional social determinants (Collins 2004; Sankar et al. 2004).

Social Construct

A residual claim used to justify the use of racial categories rests on its salience as a social construct (Krieger 2003). However, the interpretation of this role is not univocal, and there are alternative functions that do not necessarily involve categorical purposes. Race has been considered a construct that must be overcome in order to eradicate racism (Guimarães 2002). Its only possible reference would be as an emic construct, but not as a categorical entity. The terms *emic* and *etic* derive from linguistic analysis and have been used by extension to examine colour–race questions (Byrne et al. 1995). Emic constructs are accounts, descriptions and conceptual schemes consonant with the perceptions and understandings deemed appropriate by the insider's culture. On the other hand, etic constructs are descriptions and analyses structured as conceptual schemes and categories of the scientific community. Etic constructs must be precise, comprehensive, replicable and observer independent, but devoid of any priority over competing emic claims (Lett 1996).

Researchers can follow an etic or an emic strategy for racial census purposes (Harris 1990). Failure to distinguish between these two types of data is one of the most prevalent sources of confusion in the social sciences and is implicated in the unreliability of racial censuses (Harris et al. 1993). In an emic approach, racial identity is defined by using the terms that respondents regard as appropriate to categorize themselves or others, irrespective of the observer's preferences. The imposition of emically invalid categorization and inappropriate labels may generate distorted information (Byrne et al. 1995).

Governmental agencies tend to justify their proposed human categories as representing a social–political construct designed for collecting data. Yet the definition of population and race can be socially and biologically incongruent, and evidence suggests that geneticists, social scientists and clinicians allow for external validity issues when operationalizing population and racial categories in research designs, data analyses and clinical practice (Wang and Sue 2005). The American Medical Association (AMA) admits that the recognition of race and ethnicity as socially defined entities presents significant challenges to public health surveillance and medicine and that the current classification systems have limited usefulness in public health or medicine (AMA 2003).

Therefore, the claim that racial/ethnic categories are social constructs does not necessarily bear legitimization for the sake of human categorization. The proposed relevance of race as a social construct is insufficient to justify its perpetuation as a categorical and differential entity for humans.

Public Health, Labels and Stigma

Another claim for the maintenance of race as a human category is based on its purported relevance for public health and policy initiatives. This contention advocates its usefulness for reducing preventable health problems and rectifying inequalities in health status among specific population subgroups. Nevertheless, there are challenging, if not insurmountable, barriers for the use of taxons in public health surveillance as well (Ellison et al. 1997; Hahn and Stroup 1994). The intrinsic methodological problems for this proposition are likely to increase when the taxonomy is applied across countries (Travassos and David 2004).

The fundamental difficulties for using race and ethnicity as variables in public health surveillance include differences in terminology, data collection procedures, perceptions of group identity and changing demographics of population subgroups (Aspinall 1997; Hahn and Stroup 1994; Terris 1973; Williams 1996). Some authors allude to significant inconsistencies and systematic biases (Bennett 1997), and "statistical ghettos" (Terris 1973), in major sources of racial and ethnic analysis.

The concepts of race and ethnicity are weakly defined, and the way by which ethnicity or race is incorporated into studies, or measured among Federal agencies, is inconsistent (Sheldon and Parker 1992; Warren et al. 1994). There is a lack of scientific consensus on the nature of race and ethnicity. The World Health Organization does not record race or ethnicity in its international health statistics (Hahn and Stroup 1994). Moreover, umbrella terms such as Hispanic or Latino may cause a "minoritization" of foreigners by creating an artificial ethnicity (Gimenez 1989). Several authors have criticized the use of reductionist labels as a misleading, stereotypical and racist scheme that exerts ideological and political functions (Caldwell and Popenoe 1995; Hayes-Bautista 1980; Yankauer 1987).

The insuperable limitations of human categorization have already gained the status of truism in the official discourse. The US Office of Management and Budget (OMB), by way of its Directive 15, acknowledges that its categories are devoid of "scientific and anthropological" foundations (AAA 2003). The AMA encourages researchers to acknowledge the limitations of all current methods to categorize race and ethnicity, and the American Anthropological Association is expecting the elimination of the term *race* from the 2010 Census.

As a consequence, the National Institutes of Health were advised to rethink their use of *race* in population research. Such a recommendation is ultimately directed at the OMB, which, since October 1997, recognizes two categories of ethnicity and five categories of race (Oppenheimer 2001). In spite of these modifications, the above-mentioned OMB directive is still under criticism. Specifically, the ethnic category Hispanic has been criticized for including under the same descriptor people with essential differences in many critical respects (Willis 2001).

In American censuses, state officials have changed categories and their definitions several times since the first census in 1790, and the use of race, ethnicity, colour or some combination of these depended mostly on historical circumstance (Nobles 2000). Both in the United States and in Latin America, Hispanics/Latinos prefer to identify themselves by their nationalities before making any other identification as to race, language, culture or ancestry (Gonzalez 1992). In fact, 40% of those classified as Hispanics, using secondary identifiers in the 1980 census, gave a negative response to the Spanish/Hispanic origin question and instead wrote their nationalities (Tienda and Ortiz 1986). Brazilians are an example of a nationality wrongfully encompassed under the broad and imprecise conceptual boundaries of the term *Hispanic* (Taracena 2002).

Studies that examined reliability in the classification of race and ethnicity in the census found that from one year to the next, more than a third of individuals interviewed reported having different ethnic identities (United States Bureau of the Census 1974). Indeed, the AMA admits that these categories are used routinely by health researchers in an uncritical manner and with inattention to fundamental problems of measurements (AMA 2003). As a consequence, some fear that comparative analysis of longitudinal data using race/ethnicity might turn out to be difficult if not impossible (Willis 2001).

Race and Racism

Significant evidence supports the proposition that socio-economic differentials are likely to be a fundamental explanation for the observed inequalities in health status among minority groups (Nazroo 2003). The association between socio-economic status (SES) and health conditions was observed long ago in the work of Friedrich Engels in the nineteenth century. Still, there is a scarcity of reliable data on socio-economic position in health studies of various minority groups. Unlike most industrialized nations, and partly because of limited data on socio-economic position in conventional health statistics, the US concentrates on health differences according to race, instead of reporting health on the basis of socio-economic differentials in health or social class (Navarro 1990; Nazroo 2003). Race has been more salient in the US, whereas studies of health disparities in European countries have attributed much more prominence to social class (Travassos and David 2004). Some claim that the intent to analyze ethnic or racial inequalities in health status without material groundwork on socio-economic factors is naïve (Bhopal 2002b) and that the focus should be directed to all socio-economically disadvantaged individuals (Ellison et al. 1997).

The current classification systems may reinforce stereotypes and condone inequalities that obscure factual causal relationships (AMA 2003). Some authors caution that the continued use of imposed categories enforces disadvantages and perpetuates inequality (Ellison et al. 1997). In the US, ethnicity has been used as a measure of socio-economic status (Chaturvedi 2001) and race as a surrogate for poverty in many analyses (Nazroo 2003). In relation to specific umbrella terms, many authors advocate that nomenclatures such as "black," or "ethnic" labels such as Latino and Asian, have also been used as proxy or "shorthand" hypernyms for poverty and minority status (Bhopal 2002a; Bhopal and Rankin 1999; Pfeffer 1998). In the epidemiological community, there is an impression that these populational generalizations may be part of a covert racist agenda. Some also challenge the idea of ethnic group as a neutral terminology, without negative denotations, since traits such as "degree of swarthiness, hair texture, facial features, and perceived intelligence" continue to be associated with certain ethnic groups (Oppenheimer 2001: 1052). In fact, there is trend in the scientific literature to emphasize racism and prejudice instead of the still more cited terms race and ethnicity (Afshari and Bhopal 2002).

Personal experiences of racism, harassment and discrimination are associated with multiple indicators of poorer physical and mental health status (Nazroo 2003). Socially inflicted trauma and internalized oppression are considered among the leading pathways through which racism can harm health (Krieger 2003; Nazroo 2003). Discrimination is multidimensional and produces negative emotional states such as anxiety and depression, which in turn alter biological processes or patterns of behaviour (James 2003). Racism and discrimination also refer to differential treatment of group members by both individuals and societal institutions. Institutional racism also has pervasive effects on education, employment and socio-economic mobility (Williams 1996).

Racism and discrimination negatively affect the health of individuals and entire populations and are considered a fundamental cause of the enduring racial/ethnic disparities in health. Yet research on racism as a harmful determinant of population health is still in its initial stages, and only a limited number of studies have investigated how prejudice and discrimination affect racial/ethnic minority groups, including Latinos (Cain and Kington 2003). Therefore, there is an urgent need to focus beyond the interpersonal conflicts to systematically investigate how prejudice operates within society and to what extent institutional discrimination affects the health status of various groups (Williams et al. 2003).

Conclusions and Future Directions

Health services research has exhaustively documented racial and ethnic disparities in quality of care and health outcomes (Pena 2005; Shields et al. 2005). Further research should be conducted to identify the directions to reduce the disparity gaps (Bach et al. 2004). Much of the difficulty in clarifying these inequalities is due to the vague and conflated nature of the race constructs commonly used in biomedical research, which convey primarily social and political meanings (Shields et al. 2005).

The sense of identity is experienced as a fluid and contextual idea, and respondents tend to express their identities through the use of many different terms. Immigrants become labelled as an ethnic group as their length of local residence grows, but identity is manufactured domestically rather being imported from abroad (Hirschman 1982). Societal preferences should be respected by democratic states and by official census institutions, which should consider self-report as a preferable way for assessing people's identities (Kaplan and Bennett 2003). The collection of populational data based on self-reports is endorsed by the United Nations and is currently international practice (Telles and Lim 1998).

Constant vigilance is needed in order to guarantee that public health initiatives do not surpass a fair and prudent frontier of individual liberties and that public health professionals consider the moral fundamentals of their work. The work of public health professionals may be infringing on individual liberties in ethically questionable forms, particularly if social harm results from the imposition and perpetuation of social stereotypes (Kass 2001). In fact, sense of identity is considered a matter of civil rights. Some authors understand that the limitation of choices for pre-defined terms is a violation of this right, which might marginalize those respondents who do not belong to a recognized ethnic group (Aspinall 1997; Harris 1990).

This scenario warrants a proposition for an ethic framework in public health in which the ethics implications of interventions, policies, programs and research initiatives are scrutinized (Kass 2001). Public health dilemmas should be resolved via a human rights analysis, wherein a rightful and fair approach based on international human rights law should guarantee governmental responsibility and accountability (Gruskin 2002). Although legal restrictions for the use of race in medical research are "more limited than might be expected," the use of race as a variable in human biomedical and genetic research may pose legal issues as well (Lillquist and Sullivan 2006: 540). It is judicious and sensible to defend a lawful and prompt response if racism or any other sort of discriminatory act or scheme is institutionally perpetrated to any harmful extent against minority groups or individuals.

Detailed descriptions of study populations and their specific characteristics should be presented (Keita et al. 2004), and respondents should be given the right to self-report and to avoid restrictive criteria. Surveillance systems must adapt to demographic circumstances by regularly evaluating the way specific population segments conceptualize and characterize themselves (Hahn and Stroup 1994). In addition, a critical and judicious set of criteria should guide publishing policies in terms of population description and report (Obialo 1996).

New disciplines and methodologies to investigate social networks, migration and geographically concentrated poverty are needed to settle new benchmarks to develop populational inquiry (Fullilove 1998). An advanced and structured research agenda to investigate experiences of racism and discrimination as well as their impact on mental and physical health should be promoted. There is a need for more anthropological, sociological and psychological research on cultural factors that forge the internalized concepts of identity (Collins 2004). Training programs based on a new theoretical paradigm should be developed for students and investigators alike.

The abandonment of racially or ethnically oriented research is still a feat to be attained. We have now reached a momentous and timely opportunity to confront, and eventually dismantle, the moral economy that sustains racial/ethnic disparities (James 2003). The arguments based on the social construct of human nomenclature and a surveillance requirement of population classification represent a last-ditch stand to retain the racial separatism that has been considered so pervasive in the American psyche (Terris 1973). As recommended by a prominent American thinker, public opinion as well as the scientific community should "take seriously the ideals of justice and freedom that come easily to the lips but are harder to defend and advance" (Chomsky 2003: 10).

Acknowledgements

This work was supported by grant #200498/00-2 from the Brazilian national Research Council (CNPq). Dr. Katia Foresti contributed significantly in several sections of this manuscript. Professor Elizabeth Rata offered valuable review comments. In developing these ideas, I also benefited greatly from exchanges with colleagues in the Department of Psychiatry at Columbia University and in the Department of Psychiatry at Northland Health District Health Board, New Zealand.

References

Afshari, R. and R.S. Bhopal. 2002. "Changing Pattern of Use of 'Ethnicity' and 'Race' in Scientific Literature." *International Journal of Epidemiology* 31(5): 1074.

American Anthropological Association. 2003. "American Anthropological Association Response to OMB Directive 15: Race and Ethnic Standards for Federal Statistics and Administrative Reporting." Retrieved October 27, 2004. < http://www.aaanet.org/gvt/ombdraft.htm>.

American Medical Association. 2003. "American Medical Association Report 5 of the Council on Scientific Affairs (I–00): Classification of Data on Race and Ethnicity." Retrieved October 27, 2004. <http://www.ama-assn.org/ama/no-index/about-ama/13581.shtml >.

Angier, N. 2000, August 22. "Do Races Differ? Not Really, Genes Show." *The New York Times*, p. F1.

Ashley Montagu, M.F. 1942. *Man's Most Dangerous Myth: The Fallacy of Race.* New York: Columbia University Press

Aspinall, P.J. 1997. "The Conceptual Basis of Ethnic Group Terminology and Classifications." *Social Science & Medicine* 45(5): 689–98.

Bach, P.B., H.H. Pham, D. Schrag, R.C. Tate and J.L. Hargraves. 2004. "Primary Care Physicians Who Treat Blacks and Whites." *New England Journal of Medicine* 351(6): 575–84.

Bennett, T. 1997. "'Racial' And Ethnic Classification: Two Steps Forward and One Step Back?" *Public Health Reports* 112(6): 477–40.

Bhopal, R. 2002a. "Heterogeneity among Indians, Pakistanis, and Bangladeshis Is Key to Racial Inequities." *British Medical Journal* 325(7369): 903.

Bhopal, R. 2002b. "Revisiting Race/Ethnicity as a Variable in Health Research." *American Journal of Public Health* 92(2): 156–7.

Bhopal, R. and L. Donaldson. 1998. "White, European, Western, Caucasian, or What? Inappropriate Labeling in Research on Race, Ethnicity, and Health." *American Journal of Public Health* 88(9): 1303–7.

Bhopal, R. and J. Rankin. 1999. "Concepts and Terminology in Ethnicity, Race and Health: Be Aware of the Ongoing Debate." *British Journal of Dentistry* 186(10): 483–4.

Blakely, A. 1993. *Blacks in the Dutch World.* Bloomington: Indiana University Press.

Blumenbach, J. 1775. *De Generis Humani Varietate Nativa [on the Natural Varieties of Makind.].* Gottigaen, GE: A. Vandenhoek.

Bonham, V.L., E. Warshauer–Baker and F.S. Collins. 2005. "Race and Ethnicity in the Genome Era: The Complexity of the Constructs." *The American Psychologist* 60(1): 9–15.

Byrne, B., M. Harris, J.G. Consorte and J. Lang. 1995. "What's in a Name? The Consequences of Violating Brazilian Emic Color–Race Categories in Estimates of Social Well–Being." *Journal of Anthropological Research* 51: 389–397.

Cain, V.S. and R.S. Kington. 2003. "Investigating the Role of Racial/Ethnic Bias in Health Outcomes." *American Journal of Public Health* 93(2): 191–2.

Caldwell, S.H. and R. Popenoe. 1995. "Perceptions and Misperceptions of Skin Color." *Annals of Internal Medicine* 122(8): 614–7.

Cargill, M., D. Altshuler, J. Ireland, P. Sklar, K. Ardlie, N. Patil et al. 1999. "Characterization of Single–Nucleotide Polymorphisms in Coding Regions of Human Genes." *Nature Genetics* 22(3): 231–8.

Chaturvedi, N. 2001. "Ethnicity as an Epidemiological Determinant – Crudely Racist or Crucially Important?" *International Journal of Epidemiology* 30(5): 925–7.

Chomsky, N. 2003. *Hegemony or Survival: America's Quest for Global Dominance (the American Empire Project).* New York, NY: Metropolitan Books.

Collins, F.S. 2004. "What We Do and Don't Know About 'Race', 'Ethnicity', Genetics and Health at the Dawn of the Genome Era." *Nature Genetics* 36(11 Suppl): S13–5.

Darwin, C. 1859. *On the Origin of Species by Means of Natural Selection or the Preservation of Favored Races in the Struggle for Life.* London, UK: John Murray.

Ellison, G.T., T. de Wet, C.B. IJsselmuiden and L.M. Richter. 1997. "Segregated Health Statistics Perpetuate Racial Stereotypes." *British Medical Journal* 314(7092): 1485.

Fryer, P. 1984. *Staying Power: The History of Black People in Britain.* London, UK: Pluto Press.

Fullilove, M.T. 1998. "Comment: Abandoning 'Race' As a Variable in Public Health Research – An Idea whose Time Has Come." *American Journal of Public Health* 88 (9): 1297–8.

Gimenez, M.E. 1989. "'Latino/Hispanic' – Who Needs a Name? The Case against a Standardized Terminology." *International Journal of Health Services* 19(3): 557–71.

Goldstein, D.B., S.K. Tate and S.M. Sisodiya. 2003. "Pharmacogenetics Goes Genomic." *Nature Reviews Genetics* 4(12): 937–47.

Gonzalez, D.1992, November 15. "What's the Problem With 'Hispanic'? Just Ask a 'Latino.'" *The New York Times*, p. 6.

Gould, S. 1981. *The Mismeasure of Man.* New York, NY: Norton.

Gruskin, S. 2002. "Ethics, Human Rights, and Public Health." *American Journal of Public Health* 92(5): 698–9.

Guimarães, A.S.A. 2002. *Classes, Raças e Democracia.* São Paulo, SP: Editora 34.

Haga, S.B. and J.C. Venter. 2003. "Genetics. FDA Races in Wrong Direction." *Science* 301(5632): 466.

Hahn, R.A. and D.F. Stroup. 1994. "Race and Ethnicity in Public Health Surveillance: Criteria for the Scientific Use of Social Categories." *Public Health Reports* 109(1): 7–15.

Haller Jr., J.S. 1971. *Outcasts from Evolution: Scientific Attitudes of Racial Inferiority, 1859–1900.* Urbana, IL: University of Illinois Press.

Halushka, M.K., J.B. Fan, K. Bentley, L. Hsie, N. Shen, A. Weder et al. 1999. "Patterns of Single–Nucleotide Polymorphisms in Candidate Genes for Blood–Pressure Homeostasis." *Nature Genetics* 22(3): 239–47.

Hannaford, I. 1996. *Race: The History of an Idea in the West.* Baltimore, MD: Johns Hopkins University Press and the Woodrow Wilson Center.

Harris, M. 1990. "Emics and Etics Revisited." In T. Healand, K. Pike and M. Harris, eds., *Emics and Etics: The Insider/Outsider Debate* pp. 48-61. Newbury Park, CA: Sage Publications.

Harris, M., J.G. Consorte, J. Lang and B. Byrne. 1993. "Who Are Whites?: Imposed Census Categories and the Racial Demography of Brazil." *Social Forces* 72(2): 451–62.

Hayes-Bautista, D.E. 1980. "Identifying 'Hispanic' Populations: The Influence of Research Methodology upon Public Policy." *American Journal of Public Health* 70(4): 353–6.

Helms, J.E. 1996. "Toward a Methodology for Measuring and Assessing Racial as Distinguished from Ethnic Identity." In G.I. Sodowsky and J.C. Impara, eds., *Multicultural Assessment in Counseling and Clinical Psychology* pp. 143-92. Lincoln, NE: Burrows Institute of Mental Measurements.

Hirschman, C. 1982. "Immigrants and Minorities: Old Questions for New Directions in Research." *International Migration Review* 16(2): 474–90.

James, S.A. 2003. "Confronting the Moral Economy of US Racial/Ethnic Health Disparities." *American Journal of Public Health* 93(2): 189.

Jones, J.M. 1997. *Prejudice and Racism.* New York: McGraw–Hill.

Jorde, L.B. and S.P. Wooding. 2004. "Genetic Variation, Classification and 'Race.'" *Nature Genetics* 36(11 Suppl): S28–33.

Kaplan, J.B. and T. Bennett. 2003. "Use of Race and Ethnicity in Biomedical Publication." *Journal of the American Medical Association* 289 (20): 2709–16.

Kass, N.E. 2001. "An Ethics Framework for Public Health." *American Journal of Public Health* 91(11): 1776–82.

Keita, S.O., R.A. Kittles, C.D. Royal, G.E. Bonney, P. Furbert–Harris, G.M. Dunston and C.N. Rotimi. 2004. "Conceptualizing Human Variation." *Nature Genetics* 36(11 Suppl): S17–20.

King, R., J. Rottera and A. Motulski. 1992. *The Genetic Basis of Common Diseases.* Oxford, UK: Oxford University Press.

Krieger, N. 2003. "Does Racism Harm Health? Did Child Abuse Exist before 1962? On Explicit Questions, Critical Science, and Current Controversies: An Ecosocial Perspective." *American Journal of Public Health* 93(2): 194–9.

Leroi, A.M. 2005, March 14. "A Family Tree in Every Gene." *The New York Times*, pA23.

Lett, J. 1996. "Emic/Etic Distinctions." In D. Levinson, and Melvin, E., eds, *Encyclopedia of Cultural Anthropology* pp. 382-83. New York, NY: Henry Holt and Company.

Lewontin, R.C. 2005. "The Fallacy of Racial Medicine: Confusions about Human Races." *Genewatch* 18(4): 5–7, 17.

Lillquist, E. and C.A. Sullivan. 2006. "Legal Regulation of the Use of Race in Medical Research." *Journal of Law, Medicine & Ethics* 34: 535–51.

Linnaeus, C. 1758. *Systemae Naturae [the System of Nature].* Stockholm, Sweden: Laurentii Salvii, Holmiae.

Marshall, E. 1998. "DNA Studies Challenge the Meaning of Race." *Science* 282(5389): 654–5.

Navarro, V. 1990. "Race or Class Versus Race and Class: Mortality Differentials in the United States." *Lancet* 336(8725): 1238–40.

Nazroo, J.Y. 2003. "The Structuring of Ethnic Inequalities in Health: Economic Position, Racial Discrimination, and Racism." *American Journal of Public Health* 93(2): 277–84.

Nobles, M. 2000. "History Counts: A Comparative Analysis of Racial/Color Categorization in US and Brazilian Censuses." *American Journal of Public Health* 90(11): 1738–45.

Obialo, I. 1996. "Guidelines Will Encourage the Thinking That Underpins Racism in Medicine." *British Medical Journal* 313(8054): 426.

Oppenheimer, G.M. 2001. "Paradigm Lost: Race, Ethnicity, and the Search for a New Population Taxonomy." *American Journal of Public Health* 91(7): 1049–55.

Parra, E.J., R.A. Kittles and M.D. Shriver. 2004. "Implications of Correlations between Skin Color and Genetic Ancestry for Biomedical Research." *Nature Genetics* 36(11 Suppl): S54–60.

Parrilo, V.N. 1997. *Strangers to These Shores.* Boston: Allyn & Bacon.

Patrinos, A. 2004. "'Race' and the Human Genome." *Nature Genetics* 36(11 Suppl): S1–2.

Pena, S. 2005. "Reasons for Banishing the Concept of Race from Brazilian Medicine." *História, Ciência e Saúde – Manguinhos* 12(2): 321–346.

Pfeffer, N. 1998. "Theories of Race, Ethnicity and Culture." *British Medical Journal* 317(7169): 1381–4.

Royal, C.D. and G.M. Dunston. 2004. "Changing the Paradigm from 'Race' to Human Genome Variation." *Nature Genetics* 36(11 Suppl): S5–7.

Sankar, P., M.K. Cho, C.M. Condit, L.M. Hunt, B. Koenig, P. Marshall et al. 2004. "Genetic Research and Health Disparities." *Journal of the American Medical Association* 291(24): 2985–9.

Sarich, V. and F. Miele. 2004. *Race, the Reality of Human Differences.* Boulder, CO: Westview Press.

Senior, P.A. and R. Bhopal. 1994. "Ethnicity as a Variable in Epidemiological Research." *British Medical Journal* 309(6950): 327–30.

Sheldon, T.A. and H. Parker. 1992. "Race and Ethnicity in Health Research." *Journal of Public Health Medicine* 14(2): 104–10.

Shields, A., C. Lerman and P. Sullivan. 2004. "Translating Emerging Research on the Genetics of Smoking into Clinical Practice: Ethical and Social Considerations." *Nicotine & Tobacco Research* 6(4): 675–88.

Shields, A.E., M. Fortun, E.M. Hammonds, P.A. King, C. Lerman, R. Rapp and P.F. Sullivan. 2005. "The Use of Race Variables in Genetic Studies of Complex Traits and the Goal of Reducing Health Disparities: A Transdisciplinary Perspective." *The American Psychologist* 60(1): 77–103.

Smedley, A. 1999b. *Race in North America: Origin and Evolution of a Worldview.* Boulder, CO: Westview Press.

Smedley, A. and B.D. Smedley. 2005. "Race as Biology Is Fiction, Racism as a Social Problem Is Real: Anthropological and Historical Perspectives on the Social Construction of Race." *The American Psychologist* 60(1): 16–26.

Stepan, N. 1982. *The Idea of Race in Science.* Hamden, CT: Archon Books

Sternberg, R.J., E.L. Grigorenko and K.K. Kidd. 2005. "Intelligence, Race, and Genetics." *The American Psychologist* 60(1): 46–59.

Stocking, G. 1994. "The Turn-of-the-Century Concept of Race." *Modernism/Modernity* 1(1): 4–16.

Taracena, G.A.H. 2002. "What Is the Meaning of South Asian Ethnicity?" Retrieved May 20, 2002. <http://bmj.bmjjournals.com/cgi/eletters/324/7336/511#20433>.

Telles, E.E. and N. Lim. 1998. "Does It Matter Who Answers the Race Question? Racial Classification and Income Inequality in Brazil." *Demography* 35(4): 465–74.

Terris, M. 1973. "Desegregating Health Statistics." *American Journal of Public Health* 63(6): 477–80.

Tienda, M. and V. Ortiz. 1986. "'Hispanicity'" and the 1980 Census." *Social Science Quarterly* 67(1): 3–20.

Tishkoff, S.A. and K.K. Kidd. 2004. "Implications of Biogeography of Human Populations for 'Race' and Medicine." *Nature Genetics* 36 (11 Suppl): S21–7.

Travassos, C.W. and David R. 2004. "The Concept and Measurement of Race and Their Relationship to Public Health: A Review Focused on Brazil and the United States." *Cadernos de Saúde Pública.* 20(3): 660–78.

United States Bureau of the Census. 1974. "Consistency of Reporting of Ethnic Origin in the Current Population Survey, Technical Paper No. 31." Department of Commerce.

Wang, V.O. and S. Sue. 2005. "In the Eye of the Storm: Race and Genomics in Research and Practice." *The American Psychologist* 60(1):37–45.

Warren, R.C., R.A. Hahn, L. Bristow and E.S. Yu. 1994. "The Use of Race and Ethnicity in Public Health Surveillance." *Public Health Reports* 109(1): 4–6.

Williams, D.R. 1996. "Race/Ethnicity and Socioeconomic Status: Measurement and Methodological Issues." *International Journal of Health Services* 26(3): 483–505.

Williams, D.R., H.W. Neighbors and J.S. Jackson. 2003. "Racial/Ethnic Discrimination and Health: Findings from Community Studies." *American Journal of Public Health* 93(2): 200–8.

Willis, D.P. 2001. "Them and Us: The Politics of Population Taxonomy." *American Journal of Public Health* 91(7): 1048–9.

Yankauer, A. 1987. "Hispanic/Latino – What's in a Name?" *American Journal of Public Health* 77(1): 15–7.

World Health and Population provides a forum for researchers and policy makers worldwide to publish original research, reviews and opinions on health- and population-related topics. The journal encourages the conduct and dissemination of applied research and policy analysis from diverse international settings. Its stated goal is to explore ideas, share best practices and enable excellence in healthcare worldwide through publishing contributions by researchers, policy makers and practitioners.

Longwoods Publishing
Enabling Excellence

worldhealthandpopulation.com