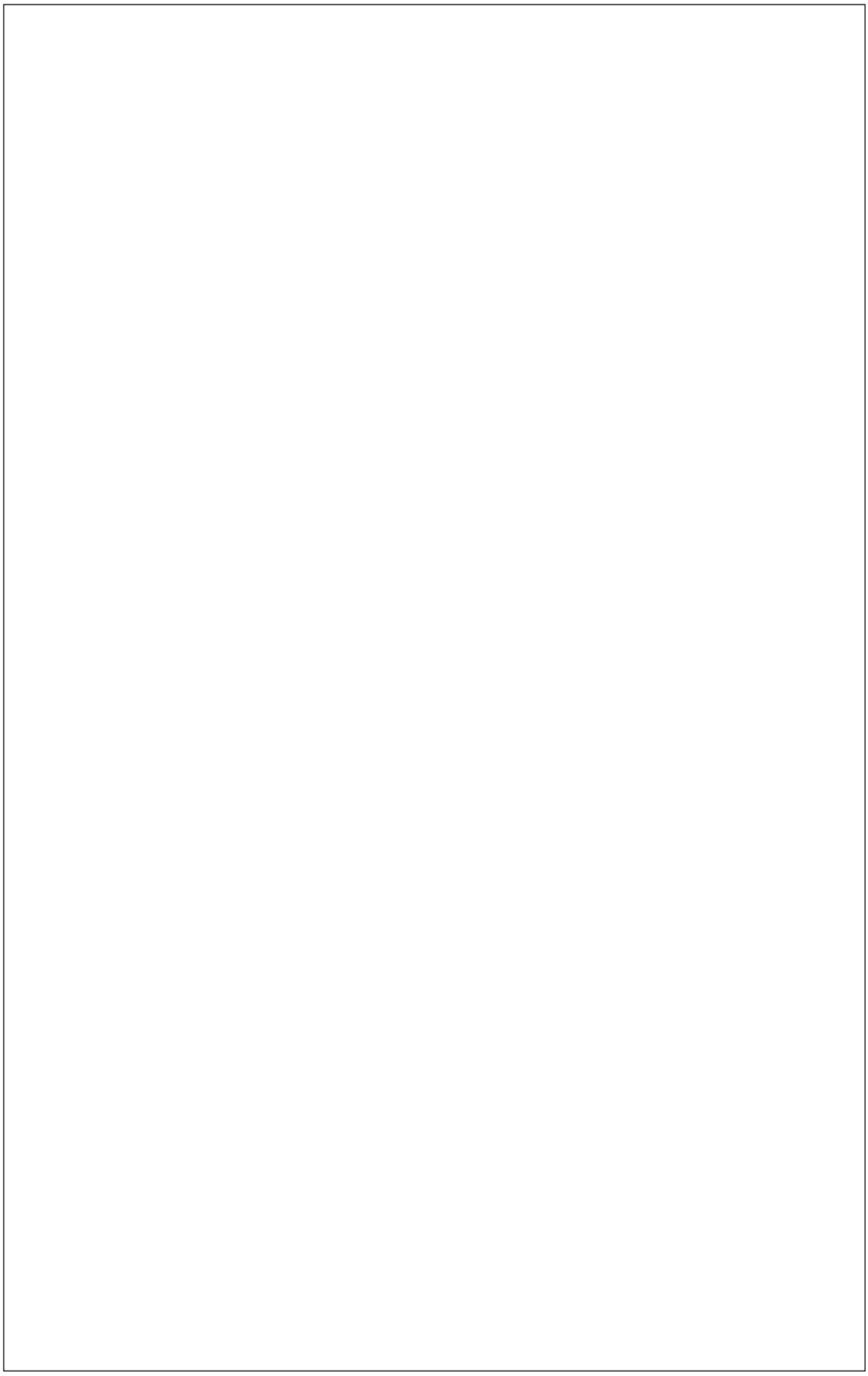
Vol. 26, No.1,
March 2011

Asia-Pacific Population Journal



Asia-Pacific Population Journal

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ASIA-PACIFIC POPULATION JOURNAL
Vol. 26, No. 1, March 2011

The Asia-Pacific Population Journal is published at least twice a year in English by the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP).

The Journal provides a medium for the international exchange of knowledge, experience, technical information and data on population related issues as a basis for policy-making and programme development.

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ST/ESCAP/2602

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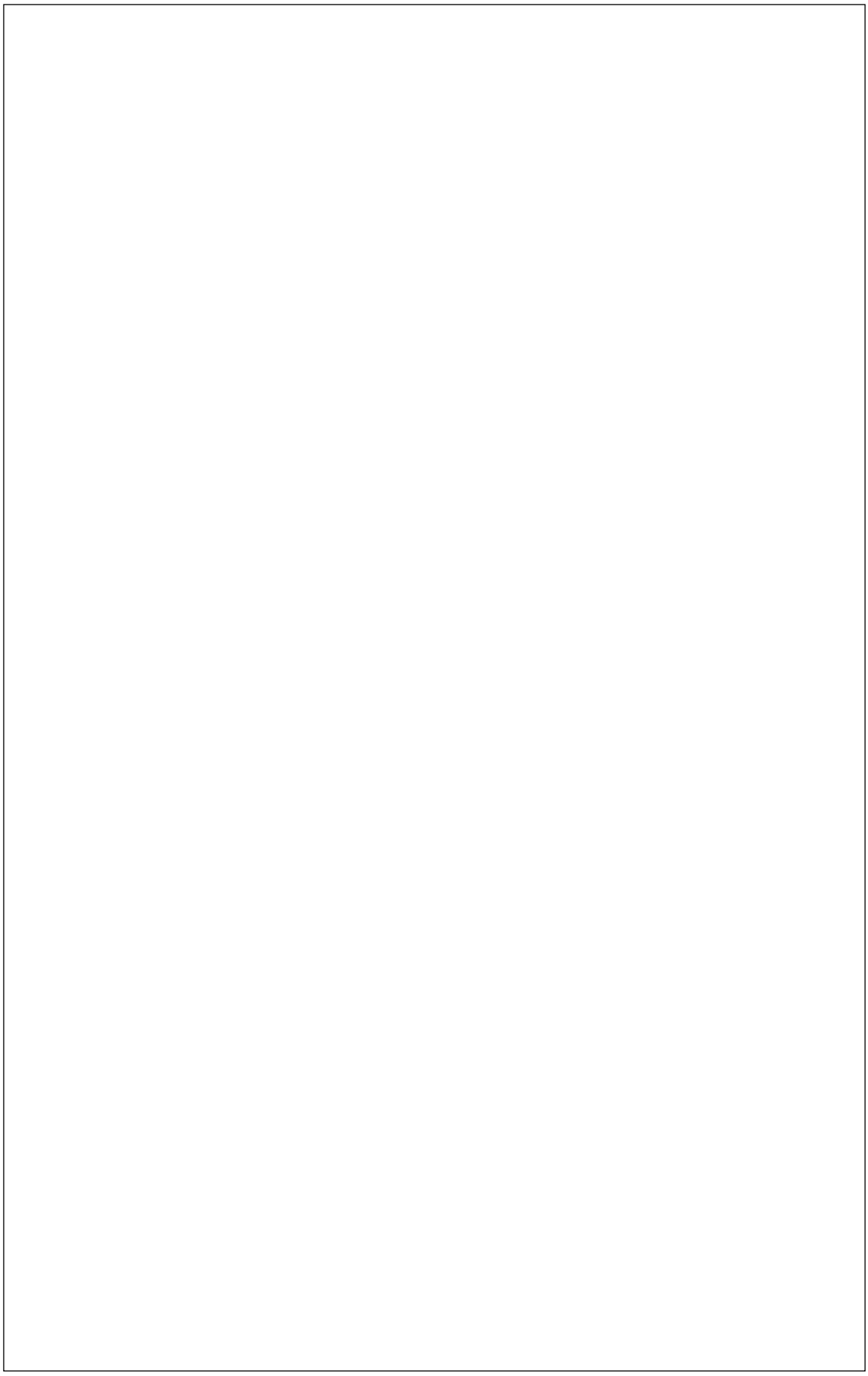

Population Policy in the Pacific: Balancing Global Priorities with Local Imperatives

By Wadan Lal Narsey*

Over the last 15 years or so, stakeholders in development issues related to population have generally moved away from the original focus on the need for developing countries to reduce their population growth towards a much broader set of issues related to the Millennium Development Goals (MDGs), which were approved by 191 countries in 2000.

Hayes (2005) noted that "voluntary family planning and improvements in reproductive health contribute directly at the household level to the needed investment in the health, nutrition and education of each child and indirectly to wider economic growth". He quoted the 2005 United Nations Millennium Project: "We thus strongly support programmes that promote sexual and reproductive health and rights, including voluntary family planning. Critical to overall success in economic growth and poverty reduction, they can help countries meet the (Millennium Development) Goals, freeing them from the poverty trap and their dependence on aid" (UN Millennium Project, 2005a:20, quoted in Hayes, 2005:37).

Hayes also noted that implementing key objectives of the Programme of Action of the International Conference on Population and Development (Cairo, 1994) including "universal access to Reproductive Health by 2015 and fully integrating population concerns into development and poverty eradication strategies" was vital if Asian and South-East Asian countries were to achieve their MDGs. One of Hayes' key recommendations (2005, p. 37) was for UNFPA to "continue working with governments and universities in the region to ensure adequate support

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for research and training in population, reproductive health and poverty, and to ensure that poverty reduction strategies and other efforts to achieve the MDGs incorporate evidence-based population and reproductive health policies".

Robertson (2007)[1] developed the same theme in suggesting that, after the 2005 World Summit, while there was an acceleration of interest in a broad range of issues related to sexual and reproductive health, there was a relative neglect of family planning issues as an important strategy for reducing poverty. Robertson further noted that there was "a failure to recognize the importance of universal access to contraceptive information and services as an explicit strategy for poverty reduction and as a fundamental human right". She concluded that this relative neglect, combined with donor fatigue and competition for limited resources available for HIV prevention, resulted in fewer resources being made available for family planning programmes.

Robertson pointed out that the reduced global focus on family planning was paralleled in the Pacific, despite the fact that many Pacific countries (especially the Melanesian countries of Papua New Guinea, Solomon Islands and Vanuatu) continued to have some of the highest total fertility rates in the world, and their populations continued to grow far more rapidly than the capacity of their economies to sustain their basic needs. Some Pacific islands had the highest population densities in the world—the Micronesian countries, in particular, had an average population density of 170 persons per square mile (Statistics and Demography Database, 2011). Not unexpectedly, some of the countries with high population growth rates had contraceptive prevalence rates that were quite low, with Solomon Islands having a mere 10 per cent and Vanuatu 28 per cent around 2005 (Robertson, 2007, table 2). Some of those countries also had some of the highest teenage fertility rates in the world.

As high total fertility rates have persisted for decades in several of the Pacific countries, the fact that poverty impact arguments and family planning imperatives have virtually disappeared from centre stage needs to be questioned. It should be noted that, for several Pacific island countries, the dangers of rapid population growth were pointed out more than a decade ago with apparently little impact on national population policies or their actual population growth rates (Cole, 1993).

The political economy of international organizations is such that, due to the availability of funds and the priorities of the fund providers, they must focus on whatever is the internationally agreed upon agenda, theme and focus of effort. Over the last 30 years or so, the "international theme" has shifted towards gender, poverty, children, the girl child, HIV and the MDGs just as, once upon a time, there was a focus on family

planning and population dynamics. International aid organizations, their work programmes and their staff priorities are inevitably driven by fund availability and the priorities of the fund providers.

Such international priorities, funding and work-programmes then feed into those of the regional organizations, such as those working in the Pacific. They, in turn, feed into the national activities of Pacific island countries, inevitably affecting nationally articulated priorities, sometimes even overriding local priorities, because international and regional meetings require inputs and finance, and work at the national level.

Most of the government budgets in the Pacific islands are extremely stressed and simply unable to release funds for local meetings to address locally felt priorities. When international funds therefore become available for policy dialogue, Pacific Governments are only too pleased to take part, not just because any dialogue internationally is better than none, but also it is a visible response to their electorates that they are "doing something". Unfortunately, the very few technocrats available in Pacific island countries are generally not able to cope simultaneously with their own priorities and those of international funding organizations. Often, the rapid turnover of key technical staff means that experienced personnel have little time to make a major and sustainable impact in any one area before they are moved to other areas. This is especially difficult for good technical people, for whom promotion usually means moving into administrative rather than technical areas. Consequently, national priorities tend to suffer. The current international focus on the MDGs provides a very good example of this underlying tension.

The global acceptance of the MDGs is undoubtedly very positive in that it forces all countries to monitor development from the myriad perspectives required by the different Goals and their subsets. However, there can be very negative impacts on small Pacific island countries. The very exercise of taking part in regional and international meetings in order to report on all the MDGs forces such countries to devote large amounts of national human resources simply to gather data on all the MDGs. There is little left to focus on what may be quite different priorities for each country. For Melanesian countries, for instance, the most critical problem has, for decades, been to provide gainful employment for the rapidly increasing labour force, most of which cannot be absorbed because of the very moderate growth rates of their economies and the even smaller growth of formal sector employment. Yet, there are no MDGs on employment that that would permit useful monitoring of progress in this area for Melanesian countries.

The MDGs set national targets which are relative to previous levels of achievement. While this is no doubt understandable given that it would be impossible to set absolute targets for the wide variety of developing

country conditions, MDG work tends to indirectly discourage Pacific island countries from focusing on the more important need to formulate employment-generating policies and strategies. Aiming for numerical targets would not be critical so much as selecting appropriate growth strategies in view of the resource endowments of Pacific island countries and the international and regional environments that will likely be imposed on them in the next decade or so by the World Trade Organization and their other economic relationships with major trading partners. The focus of Pacific island countries on the MDGs has therefore redirected intellectual effort towards the signs of economic development and growth rather than the far more critical need to formulate and implement sustainable economic growth and development policies.

This is not to say that the MDGs have no relevance for population and development policies. Indeed, a number of MDGs may be used to address population and reproductive health targets, as UNFPA (2008) makes clear with a complete chapter on the linkages in the Pacific. The tendency, however, is for many island countries in the Pacific subregion to focus on the MDGs in general and not necessarily on those population-related areas that should be their priority.

Lack of human resource capacity in the Pacific islands

A major challenge that many island countries in the Pacific can face in relation not only to population and development issues, but other global social and economic policy concerns as well, is that the civil service is generally unable to attend to the priorities of international organizations while maintaining a focus on its own unique set of issues and demands. One salient characteristic of these countries that all international organizations[2] may need to keep in mind is the extreme "thinness" of skilled and professional human resources available in the civil service of Pacific island countries, which, because of their small size, simply do not have sufficient numbers of skilled persons to address the full range of population and development issues that large Asian countries may be able to address.

Most Pacific countries, especially Melanesian countries, have suffered political instability over the past two decades, with dramatically changing national stances on most economic policies. Fiji, for example, has seen three military coups, and, each time, those who have assumed authority have articulated significantly different sets of political priorities. For those countries which do not have robust and sustainable economic and social policies that continue from one government to another, the role of civil servants then becomes crucial. Unfortunately,

the composition of the civil service at the top also changes dramatically with the changes in government.

Annually, an already limited number of professionals in small Pacific island countries are expected to attend and service international gatherings to discuss themes, pass resolutions, and prepare for the next international meeting. Developed countries and the larger developing countries of Asia and the Pacific usually have large numbers of technical people available to attend such meetings without disrupting normal work; they also have robust domestic policy platforms driven by national priorities, which are less susceptible to subjugation by the priorities of global organizations and donors. Generally, this is not the case for some of the poor developing countries in the Pacific, although a few are firmly rooted in their local priorities and cope very well with international demands.

It is unfortunate that many Pacific island countries also suffer from such severe budgetary constraints that new development initiatives are rarely able to be financed. If funding does materialize from international sources, then the natural tendency for such countries is to accept the funding and inevitably the associated priorities and themes. While a recent positive development has been in the sector-wide approach to education and health, pooling funds for national priorities and use, these are limited as donors are not able to exercise effective monitoring and control and fear that the funds will be misused, which is not rare either. Therefore, by and large, Pacific island countries are unable to channel international funding completely to their own development initiatives and priorities.

It is unfortunately also a reality that, for some small countries in the subregion which face domestic budget constraints, there is every incentive for civil servants to attend and service international meetings and present papers addressing the chosen themes, rather than focusing on what may be their own priority areas at home. For the individuals involved, this represents not only training opportunities and international exposure, but also significant personal financial incentives.[3]

Some of the international organizations, such as the United Nations Population Fund (UNFPA), respond to countries' requests according to their national priorities as formulated through their national development plans. That is not the case, however, with all international organizations that work in the area of development. Driven by the international dynamics of donor fund availability and the perceived need to identify global themes for their activities, international organizations may discount the very specific needs of smaller Pacific island countries while giving full attention to possibly less urgent needs. Thus, international organizations need to examine their own roles.

More importantly, given their most pervasive influence through funding and intellectual inputs, international stakeholders need to ensure that their global policies and efforts do not swamp the very thin layer of technical expertise that is available in the Pacific. There is a need to provide expertise and funding in accordance with individual country priorities, but international stakeholders may need to ensure that every Pacific island country strategy is not pigeonholed into "global boxes" as has been the norm for the last two decades of rolling international themes.

Pacific island Governments must also examine whether they have developed sound national policies on population and development, and whether sound national strategies are being implemented. Wherever they depart from global priorities, Pacific island countries need to stand firm and focus on their own national priorities.

Endnotes

1 This section draws heavily on the analysis and conclusions in Robertson (2007).

2 This affects not just the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP) and the United Nations Population Fund (UNFPA) but also other funding organizations and agencies of the United Nations as well as other international organizations that operate in the Pacific, such as the Asian Development Bank (ADB), the World Bank, the International Monetary Fund (IMF), the International Labour Organization (ILO).

3 Attending international meetings takes the civil servant away from the humdrum of everyday work to exotic international locations. Often, what they can save from their daily subsistence allowance is significant in comparison with their usually meagre salaries.

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the asset poor, derived from a set of economic proxies, such as housing quality, household amenities, land ownership and consumer durables, using the principal component analysis. Results show that the poverty level among older persons living in nuclear households was very high compared with that among older persons living in non-nuclear households or households without any elderly. This paper therefore suggests an analysis of the poverty data by integrating the type of households and living arrangements for the elderly to ensure evidence-based policies and programmes. It also suggests that all elderly living in nuclear households with little or no education be included in existing social pension systems and incentives be provided to promote co-residence among older persons.

Consistency in Reporting Contraception among Couples in Bangladesh 79

This paper evaluates the level and determinants of consistency in reporting contraception among couples using the couple dataset (N=2249) of the Bangladesh Demographic and Health Survey (DHS). This paper reveals that 76.5 per cent of couples in Bangladesh consistently reported contraception. Significant community effect was found in the data, which means that couples from different communities having similar characteristics will show different levels of consistency in reporting contraception. This paper recommends that DHS enhance the quality of questionnaires in order to improve the level of consistency in reporting contraception use. Programmes should emphasize effective communication within couples. Likewise, communicating family planning messages in the mass media should be further strengthened.

Exploring Demographic and Socio-Economic Factors Influencing the Utilization of Integrated Child Development Services

This paper investigates the demographic and socio-economic correlates of utilization of integrated child development services (ICDS) among children. Using data from the National Family Health Survey-3 (2005-2006), an attempt has been made to find out differences in the level of utilization according to social class and household economic conditions. This paper found that the utilization was far from satisfactory cutting across social class, household economic status and other attributes. The article presents findings that could help evolve new strategies to improve the utilization of ICDS services, and potentially reduce persistent undernutrition in India.

By Saswata Ghosh and Bidhan Kanti Das*

Undernutrition is a major public health issue which is of particular concern for children and women of reproductive age in developing countries. Undernutrition has major consequences for health, survival and economic development. It is also linked to slower cognitive development and can lead to serious health impairments later in life that can reduce economic productivity (Scrimshaw, 1996). The third round of the

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National Family Health Survey (NFHS), 2005-2006, revealed that about 40 per cent of children under the age of 3 in India were underweight and 16 per cent of them were severely underweight. The level of undernutrition has hardly changed since the second round of NFHS, conducted in 1998-1999 (International Institute for Population Sciences (IIPS) and Macro International, 2007).

To address the underlying causes of persistent undernutrition among children and women and to promote child development, the Government of India initiated the Integrated Child Development Services (ICDS) programme in 1975 under the aegis of the United Nations Children's Fund (UNICEF). This comprehensive programme has been continuing since then. The ICDS follows a holistic approach to children's well-being – aimed at pursuing health, education and nutrition-related goals through a network of *anganwadi* centres (AWCs)[1] present at the community level (Gragnolati and others, 2006). The programme encompasses a wide range of interventions, such as growth monitoring, immunization, health check-ups, supplementary feeding and preschool education among children aged 0-6, and providing nutritional supplements to pregnant and lactating mothers. Additionally, it offers nutrition and health education to improve the early childhood care and feeding practices that mothers adopt. The programme targets, in particular, the most vulnerable sections of society and those living in disadvantaged areas, such as tribal areas and urban slums (Nayak and Saxena, 2006).

The available literature relating to the ICDS programme suggests that, although a number of studies have been conducted to evaluate impact, there is little consensus about the overall success of the scheme. Several studies followed an experimental design framework with relatively small samples in narrowly defined geographic areas. Studies have shown that the ICDS programme achieved better coverage of the targeted groups, leading to a significant decline in undernutrition compared with non-ICDS beneficiaries (Tandon, 1989; Kapil and Pradhan, 1999; Saiyed and Seshadri, 2000). By contrast, the studies have also shown that the children who attended ICDS were not at a significantly lower risk of malnutrition compared with non-participants, and were sometimes even at a higher risk (Bhasin and others, 2001; Swami ,2001; Trivedi, Chhaparwal and Thora, 1995).

Some studies have also been conducted on the effectiveness of ICDS, its weaknesses and suggested measures to address them (Gragnolati and others, 2006); the role of ICDS in protecting the rights of children under 6 (Dreze, 2006); ineffective utilization of funds by the states as well as lack of effective management strategy and infrastructure (Nayak and Saxena, 2006); problems with ICDS functioning (Sinha, 2006); successful

ICDS with a "noon meal" programme in Tamil Nadu (Rajivan, 2006); and the issue of awareness and utilization of the programme (Singh, 1993).

Some of the studies were undertaken by national and international organizations based on a relatively large sample size, focusing on the evaluation of the efficacy of the programme at the national level (NIP-CCD, 2006), the monitoring of programme inputs without an impact evaluation (NCAER, 2001) or, in some states, impact evaluation, such as the Tamil Nadu Integrated Nutrition Project (TINP) (Heaver, 2002), SIDA's ICDS programme in Tamil Nadu (SIDA, 2000) and CARE-India's Integrated Nutrition and Health Project (INHP) (Johri, 2004).

The third National Family Health Survey (NFHS-3) conducted from 2005 to 2006, collected data regarding the utilization of various components of ICDS at the national level for the first time and revealed that the level of utilization of ICDS service was far from satisfactory. Only one out of every three children below 6 years of age received any kind of service from an AWC during the 12 months preceding the survey. Moreover, almost three-fourths of children in the same age group had not received any supplementary food from an AWC (IIPS and Macro International, 2007). The same data set also revealed that more than three-fourths of the mothers had not availed themselves of the services provided by the AWC during their pregnancy or lactation, while only one-fifth of the women had received supplementary food from an AWC during their most recent pregnancy (IIPS and Macro International, 2007). Therefore, there is a strong case for investigating the underlying correlates of utilization of ICDS.

The purpose of the present paper is to identify the demographic and socio-economic correlates of utilization of ICDS among children and their variations among population subgroups. After determining the inter-state variations of coverage and utilization of services, it is expected to find differences in the levels of utilization according to socioreligious communities and economic status even after controlling other potential confounders. It is hypothesized that utilization of the services is higher among the socio-economically marginalized sections of the society, particularly among scheduled tribes and those belonging to the lowest economic strata.

Materials and methods

Data

Data for this study was drawn from the third National Family Health Survey (NHFS-3) (IIPS and Macro International, 2007) carried out in India during 2005-2006 as part of the Demographic and Health Survey

(DHS) programme. The NHFS-3 covered a representative stratified random sample of 124,385 women (both ever-married and never-married) in the age group 15-49 years, 74,369 men in the age group 15-54 years and 48,679 living children belonging to the age group 0-5 years, residing in 109,041 households. The survey was aimed at providing estimates of a wide range of demographic, socio-economic and nutritional health indicators. In addition, in order to gather information on the coverage and utilization of ICDS, NFHS-3 collected data on the presence of AWC and on the utilization of selected services dispensed through AWCs to pregnant and lactating mothers and to children below six years of age.

Data on utilization was collected from 43,523 children covered by the ICDS programme area. The children's mothers provided information on the various aspects of utilization of ICDS, such as supplementary food (both food cooked and served at the AWC on a daily basis or given in the form of takeaway rations), growth promotion, immunizations, health check-ups, health and nutrition education and early childhood care or preschool education (for the children of age group 36-71 months) during the 12 months preceding the survey. Mothers were also asked about utilization of such services during their last pregnancy and lactation.

The main strata used in the sampling procedure were rural and urban areas. The primary sampling units (PSUs) (villages in the rural areas and census enumeration blocks in urban areas) were selected with a probability proportional to the size of the sampling, while the households were selected from within the PSUs.

Predictor and control variables

In order to examine the hypotheses regarding utilization of ICDS among children, the caste and religion of the children and the wealth quintiles to which they belong were used as predictor variables in the analyses. According to the Constitution of India, Scheduled Castes and Scheduled Tribes are the most disadvantaged and socially marginalized sections of society. Although they are deprived of access to various services and amenities, they fall under the "protective discrimination" provisions of the Constitution, which are meant to uplift them. Initially, the caste and religion of the household were two separate variables, but, for the sake of analysis, caste and religion were combined into a single variable and categorized as Upper Caste Hindu, Scheduled Caste Hindu, Scheduled Tribe Hindu, Other Backward Caste (OBC) Hindu, Muslims and other minorities. As information on household income or expenditure was not directly available, the state-specific household-level factor analysis scores of household assets (calculated by IIPS and

Macro International, 2007, based on the data set containing household-level information) were used to obtain state-specific wealth quintile as suggested by Mishra and Dilip (2008). Household assets consist of the following household and economic characteristics: type of house, toilet facility, source of lightning, main fuel for cooking, source of drinking water, use of separate room for cooking, ownership of house, ownership of agricultural land, ownership of irrigated land, ownership of livestock and durable goods. First, three wealth quintiles for each state were determined from the household information, pooled thereafter and merged with the data file containing child-level information. The analyses were controlled for a number of potentially confounding variables, such as age, sex and birth order of the child, educational attainment, work status and mass media exposure of mother,[2] region[3] and place of residence of the child, which might have a significant influence on the utilization of ICDS.

Community-level factors, such as activities of women's self-help groups and women's groups *(mahila mandal)* at the village level, involvement of village health committees *(panchayats)* (under the three-tier system of local governance) and other community activities might have a very important bearing on the utilization of ICDS as experienced in some cases (Bredenkamp and Akin, 2004; Dreze, 2006). However, the authors could not incorporate such variables in their analyses since data on those items was not collected during the survey. Thus, the effect of the predictor and control variables which have been incorporated in the models may, to some extent, be overestimated.

Analytical models

To identify the demographic and socio-economic determinants of utilization of ICDS among children, multivariate binary logit regression models were used. Apart from determining the correlates of utilization of any ICDS service, the present analyses were carried out for the utilization of supplementary nutrition service and utilization of preschool education service since AWCs are the only public provider of those services. The determinants of other services were also analysed and are provided in table 4. Since ICDS are meant to be used regularly, primary outcome variables in the analyses were described as "regular utilization of any service", "regular utilization of supplementary nutrition service" and "regular utilization of preschool education service" (for children in the age group 36-71 months) (for details of categorization, see notes on table 2). In the binary logit models, the response variables were coded so that children who never utilized a particular service or utilized it irregularly were given a 0 value, while those who utilized it regularly were given a value of 1.

Data was analyzed using Stata Release 9 (Stata Corporation, 2005). To obtain the basic socio-economic characteristics of samples, descriptive statistics were produced using the individual state weights. Using sample weight in the analysis allows correction of disproportionate representation of children from individual states because of complex survey design. The differences in utilization of ICDS in relation to wealth quintiles and social groups were examined through a bivariate analysis using Pearson's chi-square test of significance at $p<0.01$. The odd ratios produced by logit regressions were used for interpretation. The model assumes that the effect of any of the predictor variables is the same regardless of the choice of category of the response variables.

Results

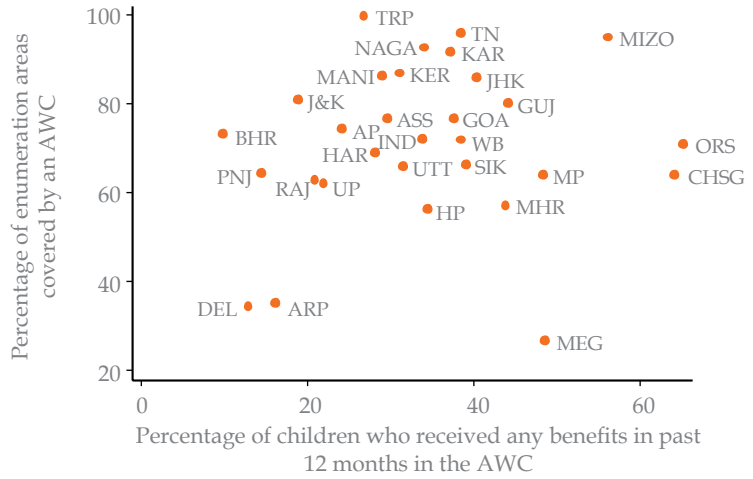
Inter-state variations

Substantial inter-state variations were observed in the utilization of all services provided by the ICDS during the 12 months preceding the survey (figure 1) ranging from a low of 10 per cent in Bihar to about 66 per cent in Orissa and Chhattisgarh. Interestingly, hardly any relation between coverage of AWCs and their utilization could be observed. For example, only about one third of the children received any benefit from AWCs where coverage of AWCs was more than 90 per cent.

In Tripura, with coverage of 100 per cent, more than 70 per cent did not perceive any benefit from AWCs during the 12 months preceding the survey. At the other end of the spectrum, though the coverage of AWCs was a little more than 25 per cent of the area of Meghalaya, about half of the children were found to have benefited from AWCs. By contrast, in Orissa and Chhattisgarh, the proportion of coverage and the proportion of children receiving ICDS were found to be almost equal. In general, it can be seen that the utilization of services is substantially higher in the states belonging to the western region of India as compared with the states in the northern and central regions.

Thus, it becomes evident that increasing the coverage of the programme would not necessarily ensure higher utilization of ICDS. It could indicate that, apart from the accessibility and availability (or supply of services) and the corresponding demand, there may be several other factors, such as quality and regularity of services, and other socio-economic and cultural factors operating at the individual and household level, which may have a significant bearing upon the utilization of services.

Figure 1. Inter-state variations of ICDS beneficiaries during the 12 months preceding the survey and coverage of ICDS, NFHS-3, 2005-2006, India



Abbreviations: AP: Andhra Pradesh, ARP: Arunachal Pradesh, ASS: Assam, BHR: Bihar, CHSG: Chattisgarh, DEL: Delhi, GUJ: Gujarat, HAR: Haryana, HP: Himachal Pradesh, IND: India, J&K: Jammu and Kashmir, JHK: Jharkhand, KAR: Karnataka, KER: Kerala, MP: Madhya Pradesh, MANI: Manipur, MHR: Maharashtra, MEG: Meghalaya, MIZ: Mizoram, NAGA: Nagaland, ORS: Orissa, PNJ: Punjab, RAJ: Rajasthan, SIK: Sikkim, TRP: Tripura, TN: Tamil Nadu, UTT: Uttaranchal, UP: Uttar Pradesh, WB: West Bengal.

Frequency of utilization of services provided under ICDS

The frequency of utilization of ICDS is depicted in table 1. As mentioned above, only about one third of the children made use of any service during the 12 months prior to the survey. Table 1 suggests that the regular utilization of the services was substantially low. Among the range of services, the frequency of utilization was the highest for the immunization service (21.5 per cent). Regular utilization of the other services averaged 10 per cent, with a high for the measurement of weight (about 14 per cent) and a low for health check-ups. The frequency of utilization of the two most important services, namely, supplementary nutrition service and preschool education were very unsatisfactory; only about 11 per cent and 13 per cent of children in the relevant age groups, respectively, utilized those services regularly during the reference period.

Table 1. Frequency of utilization of various services provided under the ICDS programme 12 months prior to the survey within the area served by ICDS, NFHS-3, 2005-2006, India

(Percentage)

Supplementary nutrition programme[a]	Frequency of utilization (N=43, 522)	Pre-school education[b]	Frequency of utilization (N=43, 522)
Never/Not at all	70.5	Regularly	13.1
Almost daily	11.1	Occasionally	9.1
At least once a week	6.3	Never/Not at all	77.3
At least once a month	7.0	Don't know	0.5
Less often	4.9	Weight measured	
Don't know	0.2	Never/No	80.9
Health check-ups		At least once a month	10.6
Never/Not at all	82.8	At least once in three months	3.8
At least once a month	10.9	Less often	3.1
Less often	4.5	Don't know	1.6
Don't know	1.7	Child, received counselling after being weighed[c]	
Immunization[d]		No	50.4
Never/No	78.2	Yes	48.6
Yes	21.5	Don't know	1.0
Don't know	0.3		

Notes: [a] Supplementary food includes both food cooked and served at the AWC on a daily basis or given in the form of take-away rations.
[b] For children 36-71 months (N=22,063).
[c] Calculated for those children who were weighed.
[d] For children aged 0-35 months (N=21,460).

Regular utilization of ICDS among population subgroups

Chi-square statistics displayed in table 2 show the statistically significant differences in the utilization of ICDS between social groups and wealth quintiles. Although the regular utilization was not appreciably high among all segments of the population, children belonging to the Scheduled Tribes and children of the lowest quintile were significantly more likely to avail themselves of ICDS ($p<0.01$) compared with children belonging to other segments. About 46 per cent of children from Scheduled Tribes utilized an ICDS service regularly, followed by children belonging to the Scheduled Caste (32 per cent). Regular utilization of

Table 2. Regular utilization* of various services 12 months prior to the survey provided under the ICDS programme by social groups and by wealth quintiles within areas served by ICDS, NFHS-3, 2005-2006

(Percentage)

Predictor variables	Supplementary nutrition programme	Health check-up	Immunization[a]	Preschool education[b]	Weight measured	Utilization of any service regularly
Social groups						
Upper Caste Hindu	10.3	9.4	16.6	13.7	12.3	24.6
Scheduled Caste Hindu	13.9	13.3	25.2	15.5	17.4	32.0
Scheduled Tribe Hindu	15.2	22.9	41.8	16.4	29.0	45.9
OBC Hindu	11.2	11.4	25.0	14.5	14.9	30.2
Muslims	8.3	6.9	15.4	9.5	9.2	21.6
Other minorities	9.0	6.2	13.5	7.7	10.2	20.7
Chi-square (p)	177.57 (0.01)	728.22 (0.01)	647.19 (0.01)	155.82 (0.01)	744.45 (0.01)	874.89 (0.01)
Wealth quintiles						
Poor	13.3	12.9	24.1	15.2	16.9	31.5
Middle	11.0	10.7	21.7	13.0	14.1	28.5
Rich	5.4	5.6	14.2	7.2	8.5	17.8
Chi-square (p)	361.74 (0.01)	296.14 (0.01)	191.65 (0.01)	171.28 (0.01)	304.65 (0.01)	594.55 (0.01)
Total	11.1	10.9	21.5	13.1	14.6	28.1
Number of cases (N)	43 522	43 522	21 460	22 063	43 522	43 522

Notes: * Regular utilization includes availing supplementary nutrition service almost daily, received health check-ups at least once a month, received immunization, regularly attended preschool education facility and weight measured at least once in a month or in three months.

[a] Calculated for children aged 0-35 months since most of the immunization is completed within 35 months of birth.

[b] Calculated for children aged 36-71 months.

any service was found to be the lowest for children of non-Muslim minorities (about 21 per cent) closely followed by Muslim children (about 22 per cent). Similarly, children belonging to the lowest economic strata utilized ICDS more regularly compared with children from relatively affluent sections. About 32 per cent of the poor children utilized ICDS regularly while the percentages were 28.5 and 18 per cent for the children belonging to the middle and affluent classes, respectively.

Econometric analysis

Odds ratios with 95 per cent confidence interval of multivariate logit regressions of regular utilization of any ICDS service, supplementary nutrition and preschool education 12 months prior to the survey are presented in table 3.

Table 3. Demographic and socio-economic factors affecting regular utilization of any ICDS service, supplementary nutrition service and preschool education service within areas served by ICDS, NFHS-3, 2005-2006 (odds ratios and 95 per cent confidence interval obtained from binary logit regression models)

Predictor variables	Regular utilization of any service	Regular utilization of SNP	Regular utilization of PSE (for children 36-71 months)
Social groups			
Upper Caste Hindu (ref.)	1.00	1.00	1.00
SC-Hindu	1.33 (1.30, 1.36)[c]	1.45 (1.40, 1.50)[c]	1.13 (1.08, 1.18)[a]
ST-Hindu	2.14 (2.08, 2.20)[c]	1.38 (1.33, 1.44)[c]	1.05 (0.99, 1.11)
OBC-Hindu	1.12 (1.10, 1.15)[c]	0.99 (0.96, 1.02)	0.90 (0.86, 0.93)
Muslims	0.86 (0.84, 0.88)[c]	0.87 (0.83, 0.90)[c]	0.70 (0.67, 0.74)[c]
Other minorities	1.08 (1.05, 1.11)[a]	1.28 (1.23, 1.34)[c]	0.66 (0.62, 0.70)[c]
Wealth quintiles			
Poor (ref.)	1.00	1.00	1.00
Middle	0.92 (0.90, 0.93)[a]	0.81 (0.79, 0.83)[c]	0.86 (0.83, 0.88)[c]
Rich	0.53 (0.51, 0.54)[c]	0.35 (0.34, 0.37)[c]	0.42 (0.39, 0.44)[c]
Child's age			
0-35 (ref.)	1.00	1.00	---
36-71	0.96 (0.94, 0.97)	1.95 (1.91, 1.99)[c]	---
Sex			
Boys (ref.)	1.00	1.00	1.00
Girls	1.09 (1.08, 1.11)[c]	1.16 (1.13, 1.18)[c]	1.25 (1.22, 1.28)[c]

(continued)

Table 3. *(Continued)*

Predictor variables	Regular utilization of any service	Regular utilization of SNP	Regular utilization of PSE (for children 36-71 months)
Birth order			
First birth (ref.)	1.00	1.00	1.00
2-3	1.06 (1.04, 1.08)[a]	1.15 (1.13, 1.18)[c]	1.08 (1.04, 1.11)
4+	0.93 (0.91, 0.95)[a]	1.03 (1.00, 1.06)	0.98 (0.94, 1.02)
Maternal education			
Illiterate (ref.)	1.00	1.00	1.00
Up to middle	1.44 (1.41, 1.46)[c]	1.55 (1.51, 1.59)[c]	1.44 (1.39, 1.48)[c]
>middle	1.30 (1.27, 1.33)[c]	1.30 (1.26, 1.34)[c]	1.30 (1.24, 1.35)[a]
Exposure to mass media of any sort			
No (ref.)	1.00	1.00	1.00
Yes	1.26 (1.24, 1.28)[c]	1.34 (1.31, 1.37)[c]	1.30 (1.26, 1.34)[c]
Work status of mother			
Not-working (ref.)	1.00	1.00	1.00
Working	1.41 (1.39, 1.43)[c]	1.41 (1.38, 1.44)[c]	1.41 (1.37, 1.45)[c]
Place of residence			
Urban (ref.)	1.00	1.00	1.00
Rural	1.61 (1.58, 1.64)[c]	1.30 (1.27, 1.34)[c]	1.58 (1.52, 1.64)[c]
Region of residence			
Northern (ref.)	1.00	1.00	1.00
Central	1.91 (1.86, 1.95)[c]	1.00 (0.96, 1.04)	1.39 (1.31, 1.47)[c]
Eastern	2.00 (2.95, 2.06)[c]	1.44 (1.39, 1.50)[c]	2.11 (1.99, 2.23)[c]
Western	3.40 (3.31, 3.51)[c]	4.83 (4.64, 5.01)[c]	5.73 (5.42, 6.06)[c]
Southern	2.00 (1.94, 2.05)[c]	2.41 (2.32, 2.51)[c]	3.78 (3.58, 3.99)[c]
North-eastern	0.89 (0.87, 0.92)	0.67 (0.64, 0.70)[c]	1.13 (1.06, 1.21)[a]
Pseudo R^2	**0.061**	**0.102**	**0.088**
Total cases (N)	**41, 332**	**41, 332**	**20, 952**

Notes: Ref.: Reference category
[a] p<0.05
[b] p<0.01
[c] p<0.001

Regular utilization of any ICDS service

Children belonging to the Scheduled Tribe community were observed to have the highest odds of utilizing any ICDS service compared with the upper caste Hindu children (Odds ratio = 2.14,). The odds ratios were also significantly higher for the Scheduled Caste children (1.33), for Other Backward Cast (OBC) children (1.12) and for the children belonging to non-Muslim minority communities (1.08). By contrast, children belonging to the Muslim community were significantly less

likely to utilize any ICDS service compared with the upper caste Hindu children (Odds ratio = 0.86).

After controlling all other confounding variables, children belonging to relatively affluent households were significantly less likely to utilize any ICDS service compared with those from poorer households (Odds ratio = 0.92 for the children of middle wealth quintile and Odds ratio= 0.53 for the children of the highest wealth quintile).

Other demographic, socio-economic and spatial characteristics were also found to have significant influences on utilization of any ICDS service. Among demographic characteristics, it was found that girls were significantly more likely to utilize any ICDS service compared with boys. Children of second and third birth order were significantly more likely to utilize any ICDS, while fourth and higher order children were less likely to utilize such services compared with those of the first birth.

From the same table, it can be ascertained that children of educated mothers were significantly more likely to utilize any ICDS service compared with children of illiterate mothers. Similarly, children whose mothers had been exposed to the mass media were significantly more likely to utilize any ICDS service compared with those whose mothers had never had any mass media exposure. It has also been observed that children belonging to working mothers were significantly more likely to utilize any ICDS service compared with those of non-working mothers.

Among spatial characteristics, both place and region of residence were found to have significant influence on ICDS service utilization even after controlling all other potential confounders. Rural children were significantly more likely to utilize ICDS compared with their urban counterparts. Conforming to the given inter-state variations, children belonging to the western, southern, eastern and central regions were significantly more likely to utilize any ICDS service compared with those of the northern region.

Regular utilization of supplementary nutrition programme

Correlates of utilization of the supplementary nutrition programme (SNP) tend to follow a similar direction as observed above, albeit with some variations. As observed above, children belonging to the Scheduled Castes, Scheduled Tribes and non-Muslim minorities were more likely to utilize SNP, while Muslim children were significantly less likely to do so, compared with the children of the upper caste (Odds ratio = 1.45 for the Scheduled Caste children, Odds ratio = 1.38 for the Scheduled Tribe children, Odds ratio = 1.28 for the children belonging to non-Muslim minorities and Odds ratio= 0.87 for the Muslim children).

The children of the middle and highest wealth quintiles were significantly less likely to utilize the SNP compared with those of the lowest segment of the economic strata in this instance also (Odds ratio= 0.81 for the children belonging to the middle wealth quintile and Odds ratio = 0.35 for the children belonging to the highest wealth quintile).

Among other control variables, it can be ascertained that female children, children of preschool age, second and third birth order children, as well as children of educated, mass media exposed and of working mothers were significantly more likely to receive nutritional supplementation from AWC compared with their respective counterparts. Analyses further revealed that rural children were significantly more likely to utilize SNP compared with their urban counterparts. Children of western, southern and eastern parts of India were significantly more likely to utilize SNP compared with children belonging to the northern region, while children from the north-eastern region were less likely to utilize SNP compared with the same reference category.

Regular utilization of preschool education

Utilization of preschool education (PSE) service, which is one of the major components of ICDS, was found to be low as mentioned above. From table 3 it may be observed that only Scheduled Caste children (Odds ratio = 1.13) were significantly more likely to utilize PSE, while children of Muslims and of other minorities were significantly less likely to utilize PSE compared with those of the upper caste (Odds ratio = 0.70 for the Muslim children, Odds ratio = 0.66 for the children of non-Muslim minorities). It may be noted that unlike utilization of other ICDS, utilization of PSE was found to be insignificant among the Scheduled Tribe children compared with the same reference category.

As with other services, children in the middle and the highest wealth quintiles were less likely to utilize PSE compared with those in the lowest wealth quintile (Odds ratios is 0.86 for the children in the middle wealth quintile and 0.42 for the children in the highest wealth quintile).

Among the control variables, it was found that the girls are significantly more likely to obtain PSE from AWC compared with boys even after accounting for other variables. As seen in relation to other services, maternal education, mass media exposure and mother's working status all have a significant positive influence in obtaining PSE for their children. Among spatial characteristics, place and region of residence were both found to have significant influences in obtaining PSE. Unlike for other cases, the children belonging to the north-eastern parts of the country were significantly more likely to utilize PSE compared with those of the northern region.

Discussion

Based on a sample covering more than 99 per cent of the population of India conducted in 2005-2006 by the NFHS in its third round of surveys, the present study provides demographic and socio-economic variations in the utilization of ICDS. Such data based on a nationally representative sample were hardly available prior to the third round of NFHS.

Although there has been an appreciable reduction in extreme hunger and poverty across the country, as well as a spectacular increase in life expectancy over the last three decades or so – together with a decline in fertility and mortality rates, particularly infant mortality rates, the improvement in the nutritional status of the general population, particularly among children and women, has been unimpressive (Shetty, 2002; Bentley and Griffiths, 2003; Ghosh, 2009). To tackle the persistent issue of undernutrition, ICDS was initiated more than 30 years ago; yet, its utilization has been far from satisfactory. Apart from investigating the inter-state variations of coverage and utilization, the present analyses were carried out to explore the extent to which children of socially excluded and economically marginalized sections of the society have been utilizing the ICDS provided.

Previous studies have found that the irregularity of services, especially that of food supply, quality and variety of food provided and mothers' subjective assessment of their children's nutritional status were major bottlenecks in the utilization of ICDS services even when the coverage was high (Bredenkamp and Akin, 2004; Dreze, 2006). Appalling instances of food distribution being disrupted were observed in Bihar, Jharkhand, and Uttar Pradesh where the SNP has been interrupted for months at a time, leading ICDS to a standstill as children stopped attending (Dreze, 2006). Dreze (2006) also found that low quality and lack of variety of food in AWCs in Uttar Pradesh and Rajasthan were among significant causes of low uptake, while food provided in Himachal Pradesh and Tamil Nadu, by contrast, was high in nutritional value with plenty of variety, leading to relatively higher utilization of services. Also, the study revealed that the majority of mothers did not feel it necessary for their children to attend AWC (Vaid and Vaid, 2005), while a serious mismatch between mothers' perception of their children's nutritional status and actual health status was found in Uttar Pradesh and Kerala (Bredenkamp and Akin, 2004). There may also be other cultural factors associated with feeding practices among population subgroups, community support for the programme, involvement of an *anganwadi* worker in mobilizing children and women, among other things, which could further explain the variation between coverage and utilization among states.

The present analysis revealed that children are availing themselves of immunization services most compared with other services provided by ICDS across social groups and economic strata. This corroborates earlier findings in this regard. Dreze (2006) found that about 60 per cent of mothers reported making use of the immunization services provided at the AWCs. That was possibly due to the joint efforts of the *anganwadi* worker and the local-level health worker in achieving success in the centrally sponsored Universal Immunization Programme, especially as part of the nationwide Pulse Polio Eradication campaign.

The authors' hypothesis regarding utilization of ICDS by Scheduled Caste and Scheduled Tribe children was partially established. Discriminated communities tend to have low literacy rates, limited purchasing power, very little access to basic amenities, resources and entitlements, besides being generally reliant on casual employment (Chatterjee and Sheoran, 2007). Health-care utilization, in general, and utilization of maternal and child health care, in particular, was found to be substantially low among these groups compared with upper caste Hindu since the former are less likely to access or be able to afford access to health-care services when required (Govindaswamy and Ramesh, 1997; IIPS and ORC Macro, 2000; IIPS and Macro International, 2007; Sandhyarani, Ghosh and Shoran, 2007). AWCs are supposed to be built in close proximity to the Scheduled Castes and Scheduled Tribes areas, while the *anganwadi* workers are expected to place particular emphasis on recruitment into the programme of underprivileged children in order to fulfil the programme objective.

The present analysis revealed that, although regular utilization of ICDS was not appreciably high across population subgroups, children belonging to the Scheduled Castes and Scheduled Tribes were significantly more likely to make use of such services, particularly supplementary nutrition, compared with children belonging to upper caste Hindu. This supports earlier evidence in this regard (Bredenkamp and Akin, 2004; Gragnolati and others, 2005). A study undertaken by the Educational Resource Unit also provided qualitative evidence of higher up-take among Scheduled Tribes compared with the upper castes, perhaps, partly because of the social stigma associated with the receipt of benefits among the upper castes (ERU, 2004), while another study demonstrated that the utilization by children of a particular caste appears to be influenced by the caste of the *anganwadi* workers themselves and the caste that is dominant in the local community (Gragnolati and others, 2006).

Interestingly, children belonging to the Muslim community were significantly less likely to utilize the services compared with the upper caste Hindu and had the lowest odds of utilization of any ICDS service and SNP compared with other social groups. This may be explained in

many ways. First, ICDS coverage is lacking in certain Muslim-dominated areas, especially in states such as Uttar Pradesh, Bihar, Jharkhand, Uttaranchal and Rajasthan (Sachar Committee Report, 2006). Second, Muslim women in India are very restricted as regards movement outside the household as compared with their Hindu counterparts (Ghumen, 2003; Hasan and Menon, 2004), which may be one more reason why they mostly could not bring their child to AWCs on their own. Furthermore, the limited attendance of children might be due to the fact that *anganwadi workers* are mostly from the Hindu community as pointed out earlier (Gragnolati and others, 2006).

It is also important to note that, apart from Muslim children, children belonging to the Scheduled Tribes and other non-Muslim minority communities are significantly less likely to obtain PSE from AWCs compared with those of upper caste Hindu, despite those Scheduled Tribe children being among the end users of other ICDS. Formal preschool education seems also to be of a lesser value for children belonging to the Scheduled Tribe and Muslims since their level of educational attainment in the formal schooling system is generally low. It could also be that the language of instruction in the PSE may not necessarily be the mother tongue of children belonging to the Scheduled Tribes (Pratichi Research Team, 2002). Other minorities, especially the Christian community, may possibly rely more on the Christian missionary schools rather than preschool education of ICDS, in particular in the north-eastern regions of the country.

The second hypothesis brought forward by the authors regarding the utilization of ICDS and economic vulnerability has broadly been supported. Despite unsatisfactory utilization across economic strata, the present study revealed that children in the middle and the highest wealth quintiles were significantly less likely to utilize ICDS compared with those of the lowest economic segment of the society. However, some other studies have found remarkably little variation in children's participation rates across household wealth categories despite substantial variations across states (Bredenkamp and Akin, 2004). It is worth noting that surveys conducted on a nationally representative sample may not necessarily be very accurate with regard to low attendance of poor, disadvantaged children in specific villages owing to sampling bias/error. Some micro-level field studies indeed revealed that, in Uttar Pradesh, the poorest of the poor were frequently debarred from the benefits of ICDS interventions and underrepresented at AWCs (ERU, 2004).

The present study has found that the utilization of SNP among preschool children was significantly higher than that of their younger counterparts, thus reconfirming earlier findings (Gragnolati and others, 2005). AWCs primarily offered such services and focused on centre-based

activities targeting preschool age children, thereby failing to attract children aged below 24 months (Measham and Chatterjee, 1999; Gragnolati and others, 2006). The *anganwadi* workers tend to recruit more preschool age children than infants, perhaps owing to the fact that prevalence of long-term undernourishment has been found to be markedly higher in the latter age group (IIPS and Macro International, 2007). However, recent studies have shown that nutritional intervention during infancy and early childhood consisting exclusively of breastfeeding for the first six months and supplementary nutrition (rich in vitamin A and zinc) along with breastfeeding from 6 to 24 months have considerable potential benefits for the cognitive and physical development of children and would benefit them throughout their lives (Horton, 2008). This clearly implies that ICDS interventions tend to miss the most critical age-group and that corrective measures are needed in order to ensure that they benefit infants; reaching out to expectant and lactating mothers might be a good start.

It is encouraging that girls are participating significantly in the ICDS programme, even more so than boys, while there seems to be no gender discrimination in the reach of ICDS as reported in other studies (Bredenkamp and Akin, 2004; Gragnolati and others, 2005). However, a careful examination of the present data reveals that there was almost no difference between boys and girls in terms of regular utilization of any ICDS service and SNP in the age group 0-3 years, while girls were found to be utilizing ICDS, especially SNP and PSE, more than boys during the preschool years (3-6 years). For instance, in the southern states of Karnataka and Andhra Pradesh, girl children aged 3 to 6 were using ICDS significantly more than boys (about 6-11 percentage points higher), while in the northern states, such as in Rajasthan and Uttar Pradesh, girls were also utilizing ICDS more than boys, though to a lesser degree (nearly 2-5 percentage points higher). Arguably, this implies that, owing to son preference, in a resource-constrained household environment, parents tend to look after their son within the household, while sending their daughter to AWCs during preschool period possibly even after having acknowledged poor quality of ICDS. The lesser difference between utilization of ICDS between boys and girls during preschool period in the northern states (which are also strongholds of patriarchy) may be attributed to the economic underdevelopment of those states and the high incidence of poverty, which forces parents to send even their boys to AWCs despite poor service delivery. Therefore, a covert, if not overt, form of gender discrimination exists which starts during a child's infancy and manifests itself as discriminatory breastfeeding and nutritional supplementation (Arokiaswamy, 2005; Arnold, Choe and Roy, 1998; Das Gupta, 1987; Kaur, 2008).

It is widely accepted that maternal education plays a very important role in improving children's health and nutritional outcomes (Mishra,

Lahiri and Luthar, 1999; Ghosh, 2005). Educated women tend to have better access to information, greater decision-making power and the ability to better utilize the available health and nutrition inputs even if it is offered outside the home (Cleland and van Ginneken, 1988; Glewwe, 1999). In line with earlier research findings, the present analysis also found that maternal education plays a significant positive role in the utilization of ICDS, even after controlling other potential confounders. Although there is hardly any study showing a direct relationship between mass media exposure and utilization of ICDS, exposure to the mass media can play an important role in enhancing knowledge of available public health and nutritional services, among other things, thus increasing utilization.

The present analysis has also found that working women were significantly more likely to use ICDS regularly for their children compared with their non-working counterparts. Studies have reported that working mothers are more likely to utilize health-care and nutrition services compared with their non-working counterparts, possibly owing to their greater exposure to relevant information and knowledge about the services (see, for example, Nabaneetham and Dharmalingam, 2002). Furthermore, in the absence of efficient adult caregivers in the household, working mothers may perceive AWC as a day-care centre for their children and thus may be more likely to send their children to such centres.

The present study has also observed that children in rural areas are significantly more likely to utilize ICDS compared with urban children. This is certainly related to the limited availability of ICDS in urban slums. In 2003, only about 6 per cent of ICDS blocks were located in urban slum areas (Parliament of India, 2003), which indicates that a considerable proportion of already undernourished and vulnerable children living in urban slums are debarred from the nutrition inputs provided by public services. This warrants appropriate action from the agencies concerned.

Regional variations in the utilization of ICDS are possibly due to differences in the availability and accessibility of services, the quality of service delivery, and the influence of certain cultural factors associated with child feeding practices. In addition, differentials in the levels of socio-economic development between regions could also account for the emerging differences in utilization. The central region of India, for instance, is considered less developed in terms of educational attainment, macroeconomic conditions, basic infrastructure (such as roads) and the availability and utilization of basic health-care facilities. By contrast, the southern and the western parts of the country are more developed with regard to the above indicators (Ghosh, 2005). Certain political factors — political stability, political willingness to implement

the programme decisively, involvement of local-level political institutions in day-to-day AWC activities — could further explain disparities in the utilization of services among regions. A detailed examination of the region-specific factors associated with ICDS utilization might be necessary, but that is beyond the scope of the present study.

Policy implications of research findings

It is to be noted that many of the enhancing factors of utilization will not be changed through rapid interference, but they may be amenable through long-term intervention.

In summary, the rate of utilization was highest for children belonging to the Scheduled Caste and Scheduled Tribe, for those from the poorest section of the society, for girl children, children of preschool age, those residing in rural areas or in the western or southern regions of India, those belonging to second or third birth order, and those born to women who completed at least middle school, were exposed to print or audio-visual media and were working.

Apart from increasing coverage, a special effort is therefore needed to recruit children from across all sections of the society, especially from the poorest of the poor and socially marginalized segments. Programme managers must also reflect on ways to boost preschool education programmes, perhaps by providing early childhood education in the child's mother tongue and by using a greater variety of teaching materials and methods. In addition, enrolling a greater number of children aged below 24 months must be a priority. This can perhaps be achieved by recruiting more pregnant and nursing mothers into the programme. *Anganwadi* workers must strive to reach all pregnant and nursing mothers within their jurisdiction and provide proper counselling to bring them into the ambit of the programme.

In addition, sustained efforts are urgently required in order to increase maternal education, especially with regard to health and nutrition. Information, education and counselling (IEC) activities concerning nutritional requirements for children and the role of ICDS must also be strengthened at the community level, especially among mothers since the present study has found that media exposure may play an important role in the utilization of ICDS.

There are some small-scale experimental health and nutrition programmes which provided daily services for young children and mothers showing improved performance in some states; these programmes were found to be closely linked with greater community involvement (Bredenkamp and Akin, 2004). Thus, programme managers should

make an effort to engage the community proactively, possibly by involving it in monitoring and supervising the daily functioning of AWCs. For example, communities may oversee the centres' punctuality in opening and closing, the regular attendance of staff and the quality of the services provided, requesting improvements when necessary. Greater synergy between activities conducted by the local government, the *anganwadi* workers and the auxiliary nurse midwives of the health department subcentres is also called for to enhance the utilization of services among target beneficiaries and continuously improve the functioning of AWCs. Moreover, traditional local level institutions, women's self-help groups and village health committees can be involved to generate awareness about health and nutrition of children and women and to mobilize communities at the grass-roots level so that they can receive the benefits of ICDS.

The factors identified as significant in predicting the utilization of ICDS among children and, in general, the findings of the present paper underscore the need for a new direction and for improved strategies that programme managers may want to follow. The new approach should have a fundamental impact on the basic understanding of the ICDS programmes at the community level and take into consideration the importance of conveying those ideas to mothers, thereby increasing the utilization of such programmes in the long run.

Annex Table

Demographic and socio-economic factors affecting regular health check-up, immunization service and weight measurement provided under ICSD within areas served by ICDS, NFHS-3, 2005-2006 (odd ratios and 95 per cent confidence interval obtained from binary logit regression models)

Predictor variables	Received health check-ups regularly	Received immunization (for 0-35 months)	Weight measured regularly
Social groups			
Upper caste Hindu (ref.)	1.00	1.00	1.00
SC-Hindu	1.43 (1.39, 1.48) [c]	1.48 (1.43, 1.54) [c]	1.48 (1.43, 1.52) [c]
ST-Hindu	2.52 (2.43, 2.62) [c]	2.75 (2.63, 2.87) [c]	2.68 (2.59, 2.77) [c]
OBC-Hindu	1.08 (1.05, 1.12)	1.32 (1.28, 1.37) [c]	1.10 (1.07, 1.13)
Muslims	0.76 (0.72, 0.79) [c]	0.88 (0.85, 0.92) [a]	0.77 (0.74, 0.80) [c]
Other minorities	1.27 (1.21, 1.33) [b]	1.26 (1.20, 1.32) [a]	1.55 (1.49, 1.61) [c]
Wealth quintiles			
Poor (ref.)	1.00	1.00	1.00
Middle	0.85 (0.83, 0.87) [b]	0.98 (0.96, 1.01)	0.79 (0.77, 0.81) [c]
Rich	0.42 (0.41, 0.44) [c]	0.71 (0.67, 0.74) [c]	0.43 (0.42, 0.44) [c]
Child's age			
0-35 (ref.)	1.00	---	1.00
36-71	0.92 (0.91, 0.94) [a]	---	0.93 (0.91, 0.95) [b]
Sex			
Boys (ref.)	1.00	1.00	1.00
Girls	1.03 (1.00, 1.05)	1.03 (1.00, 1.05)	1.06 (1.04, 1.08) [a]
Birth order			
First birth (ref.)	1.00	1.00	1.00
2-3	1.07 (1.04, 1.09)	1.03 (1.01, 1.06)	1.10 (1.08, 1.12) [b]
4+	0.92 (0.89, 0.95) [a]	0.94 (0.91, 0.97)	0.94 (0.92, 0.97)
Maternal education			
Illiterate (ref.)	1.00	1.00	1.00
Up to middle	1.45 (1.41, 1.49) [c]	1.34 (1.31, 1.38) [c]	1.80 (1.76, 1.84) [c]
>middle	1.36 (1.32, 1.41) [c]	1.21 (1.16, 1.25) [a]	1.62 (1.57, 1.67) [c]
Exposure to mass media of any sort			
No (ref.)	1.00	1.00	1.00
Yes	1.37 (1.34, 1.41) [c]	1.13 (1.10, 1.16) [b]	1.43 (1.41, 1.46) [c]
Work status of mother			
Not-working (ref.)	1.00	1.00	1.00
Working	1.29 (1.26, 1.32) [c]	1.44 (1.41, 1.48) [c]	1.37 (1.34, 1.39) [c]

(continued)

(Continued)

Predictor variables	Received health check-ups regularly	Received immunization (for 0-35 months)	Weight measured regularly
Place of residence			
Urban (ref.)	1.00	1.00	1.00
Rural	1.48 (1.44, 1.53) [c]	1.77 (1.71, 1.83) [c]	1.33 (1.30, 1.37) [c]
Region of residence			
Northern (ref.)	1.00	1.00	1.00
Central	1.75 (1.68, 1.82) [c]	2.64 (2.53, 2.75) [c]	2.17 (2.09, 2.25) [c]
Eastern	1.95 (1.87, 2.03) [c]	2.27 (2.17, 2.36) [c]	2.60 (2.51, 2.70) [c]
Western	4.60 (4.42, 4.79) [c]	3.11 (2.97, 3.26) [c]	4.71 (4.54, 4.89) [c]
Southern	2.43 (2.33, 2.53) [c]	2.07 (1.99, 2.17) [c]	2.46 (2.37, 2.55) [c]
North-eastern	0.45 (0.43, 0.48) [c]	0.75 (0.71, 0.79) [c]	0.60 (0.57, 0.62) [c]
Pseudo R^2	**0.089**	**0.071**	**0.089**
Total cases (N)	**41, 332**	**20, 380**	**41, 332**

Notes: Ref: Reference category
[a] p<0.05
[b] p<0.01
[c] p<0.001

Acknowledgements

An earlier version of the paper was presented in a Faculty Seminar at the Institute of Development Studies Kolkata (IDSK), India. It was also presented in the Priorities 2008: Conference of the International Society for Priorities in Health Care organized by the University of Newcastle, the United Kingdom of Great Britain and Northern Ireland, held from 28 to 31 October 2008. Thanks are due to the participants of both seminars for enlightening discussions. The authors would also like to express their gratitude to Professor Amiya Kumar Bagchi and Professor Achin Chakraborty for their valuable comments and suggestions.

Endnotes

1 The Integrated Child Development Service (ICDS) is mainly managed by *anganwadi* workers, who are part of a network of *anganwadi* centres (AWCs). An *anganwadi* worker (AWW) is typically a health worker from the community who has undergone four months of training in various aspects of health, nutrition and child development. The duties of *anganwadi* workers include performing regular health check-ups and immunization, and providing health education and non-formal preschool education. AWWs also provide outreach services to poor families in need of immunization, healthy food, clean water, clean toilets and a learning environment for infants, toddlers and preschoolers. They also provide services to expectant and nursing mothers. AWWs also assume the responsibility of running the centres, which usually cover a population of about 1,000.

2 Here "exposure to mass media" has been created from three separate variables, namely, "read newspaper or magazine at least once a week", "watch television at least once a week" and "listen to radio at least once a week". Those three variables were found to be strongly associated with each other and so a composite variable was formed based on those: "exposure to mass media of any sort". A woman who had been exposed to any of the three was regarded as having been exposed to any sort of mass media.

3 NFHS-3 divided India into six geographic regions (northern, central, eastern, western, southern and north-eastern) depending upon climatic and topographic conditions and population composition. The northern region comprises Jammu and Kashmir, Himachal Pradesh, Uttaranchal, Haryana, Punjab, Rajasthan and New Delhi. The central region includes Uttar Pradesh, Madhya Pradesh and Chhattisgarh. Bihar, Jharkhand and Orissa. West Bengal forms the eastern region, whereas Maharashtra, Gujarat and Goa constitute the western region. The southern region includes Kerala, Tamil Nadu, Karnataka and Andhra Pradesh. The north-eastern region includes Assam, Arunachal Pradesh, Manipur, Meghalaya, Mizoram, Nagaland, Tripura and Sikkim.

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Health Status and Health-seeking Behaviour between Interprovincial and Intraprovincial Rural-to-urban Young Migrants in Nanjing, China

There has been a dramatic increase in interprovincial migration in China because of regional economic disparities. Interprovincial migration has contributed to population redistribution and economic development, however, limited data are available to examine whether the health status of interprovincial migrants differs from that of intraprovincial migrants. Data from 1,842 rural-to-urban temporary migrants aged 18-30 years were analyzed to examine the differences in health status (measured by self-rated health, physical problems, depression), and health-seeking behaviour between these two types of internal migrants. It was found that interprovincial migrants were more likely to report depression symptoms and were less likely to seek formal health-care services than intraprovincial migrants. The findings indicate that specific attention should be given to health promotion and health-care access of interprovincial rural-to-urban migrants.

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A migrant is a person who moves from a place of origin to a destination and crosses an administrative boundary within a country or between countries irrespective of the distance (Hull, 1979; Lee, 1966). Reviewing the study of migration and health, Hull pointed out that "Depending upon the person, the characteristics of the place of origin and the destination, and upon the presence of a community of earlier arrivals, migration can require widely differing amounts of acclimatization effort" (1979: 26). The effects of place of origin on health among international immigrants and interregional migrants has long been recognized and observed in European countries and the United States of America (Bentham, 1988; Cunningham, Ruben and Narayan, 2008; Mancuso and Sterling, 1974; Regidor and others, 2008; Strachan, Leon and Dodgeon, 1995; Tyynelä and others, 2009). Previous studies have suggested that migrants' place of origin was associated with morbidity (Bentham, 1988), physical health and mental health (Krupinski, 1984), self-rated health (Zhang and Ta, 2009), and health related behaviour (Lenthe, Martikainen and Mackenbach, 2007). However, to date few studies have focused on such issues among internal migrants in Asian countries, including China (Hu, Cook and Salazar, 2008; Knodel and VanLandingham, 2003; Lu, 2008).

Internal rural-to-urban migration in China has been dramatically increasing in the last two decades because regional economic inequality has provided an impetus, coupled with the relaxation of government controls on migration (Liang, 2004). The interest in health issues among rural-to-urban migrants has also been growing (Fan and Sun, 2008; Feng and others, 2005; Hesketh and others, 2008; Hu, Cook and Salazar, 2008; Li and others, 2006; Li and others, 2009). However, research results regarding the relationship between migration and health in China are mixed. For instance, some studies indicated that rural-to-urban migrants were more likely to report poorer general health and poorer mental health compared with the urban and rural residents (Li and others, 2009). By contrast, Hesketh and others (2008) found that rural-to-urban migrants had higher self-rated health compared with urban permanent residents and rural residents. Besides possible sampling and methodological issues (Tucker, 2006), there might be a number of contextual factors contributing to the discrepancy in those findings, such as access to the health-care services and prevention programmes in the destination to which they moved (Gushulak and MacPherson, 2006) and duration of stay in the destination (Uretsky and Mathiesen, 2007).

Rural-to-urban migration in China is considered temporary and is highly circular, resulting in the so called "floating population" (Liang and Ma, 2004). Rural-to-urban migrants tend to move temporarily from less developed areas to more developed ones because the Chinese dual household registration system makes it difficult for rural residents to obtain permanent residence in urban areas (Chan and Zhang, 1999).

Whether rural-to-urban migrants migrated within the province or migrated across provinces defines two main types of internal migration: interprovincial migration and intraprovincial migration (Liang, 2001; Liang and Ma, 2004). Compared with intraprovincial migrants, interprovincial migrants are likely to travel longer distances from origin to destination and the cost of migration is likely to be higher (Liang, 2001; Poncet, 2006). Some studies have suggested that interprovincial migration has contributed to population redistribution and economic development at the national and regional levels (Fan, 2005a; He and Pooler, 2002; Liang, 2004). However, studies related to the differences in health status and health needs between inter- and intraprovincial migrants, especially young migrants are scarce. Therefore, the authors designed the present study in order to examine the differences in self-rated health, physical health, mental health, or health-seeking behaviour between interprovincial and intraprovincial migrants. The authors hypothesize that interprovincial migrants may have worse health status than intraprovincial,migrants, particularly mental health.

Methods

Study site

Nanjing city of Jiangsu province, located in the east of China, was chosen as the study site. As one of the most economically developed provinces with a high gross domestic product (GDP), Jiangsu is one of the main receiving provinces for migrants from neighbouring provinces (Fan, 2005b; He and others, 2008). Jiangsu was ranked second in terms of percentage of interprovincial migrants in China in 1995 (Liang, 2001). Nevertheless, intraprovincial migrants still constitute the dominant migration population. According to a national survey, in Jiangsu province the interprovincial migrants accounted for 31.9 per cent of the total migrants, while the intraprovincial migrants accounted for 68.1 per cent (Liang, 2001). Jiangsu province has a distinct geographic pattern in terms of economic development. Northern Jiangsu is less developed than the southern part of the province. Among the cities in Jiangsu's southern zone is the capital city of Nanjing, which is one of the main receiving cities for rural migrants from both northern Jiangsu and other provinces.

Participants and sampling

The participants in the current study were a subsample of the participants in a larger feasibility study of an HIV/AIDS prevention intervention programme among rural-to-urban migrants in China (Li and others, 2004). The eligible participants in the original study were rural-to-urban

migrants who: (a) were aged 18 years and above; (b) had transferred from rural areas to the city to find jobs; (c) had no permanent status in the city; and (d) had resided in the city for at least 6 months. The sample was recruited using a "quota sampling" of occupational groups. Based on available government statistics regarding migrant occupations in China, 10 occupational clusters accounting for more than 90 per cent of migrants were selected as the main sampling frame. Those occupational clusters included restaurant, hotel, barbershop/beauty salon, bathhouse/massage parlour, nightclub/dance hall/bar/karaoke, construction, street vendor/stall, small retail shop, domestic service and factory. The number of participants recruited in each occupational cluster was approximately proportionate to the overall estimated distribution of migrants in the cluster. Workplaces (e.g. store, shop, club, office, factory, construction site) were used as the sampling units. To prevent oversampling migrants from any single sampling unit, the numbers of migrants recruited from one unit did not exceed 10 per cent of total migrants in the unit. For those migrants who did not have a fixed workplace (such as repairmen, street vendors), streets were used as the sampling units. Approximately 9 per cent of the sample was recruited from the streets. A small percentage of migrants (1.8 per cent) who did not have a job were recruited from job markets.

Among the total sample of 1,986 eligible participants recruited from Nanjing in the original study, 1,905 participants who were aged between 18 and 30 years (i.e., young migrants) were involved in the current study. Sixty-three cases who had a missing value for variables of place of origin and years of staying in the current city were excluded, which resulted in the final sample of 1,842 participants for the current analysis.

Data collection

A self-administered questionnaire was developed as an assessment tool through a joint effort between Chinese and United States investigators. The interviewers provided assistance to a few migrants who had limited literacy (e.g. reading them the questions). Participants were informed of the purpose and design of the study and were given assurance of confidentiality for their responses. All participants provided written informed consent before participating in the survey. The survey was conducted at local sites such as the migrants' workplace (or at a nearby available space). It took approximately 45 minutes to complete each survey. Each participant received a small payment in appreciation for his/her time in participating in the survey. The study protocol and consenting procedure were approved by the Institutional Review Boards (IRB) of West Virginia University and Wayne State University in the United States and Nanjing University in China.

Measures

Type of migration. Participants were asked where they were originally from. If a migrant's place of origin was within Jiangsu province, the migrant was considered as an intraprovincial migrant while migrants were considered as interprovincial if their places of origin were other provinces.

Self-rated health. Self-rated health has been found to be a strong predictor of current and future health (Benjamins and others, 2004; Delpierre and others, 2009; Lee and Grant, 2009; Singh-Manoux and others, 2007). Participants were asked to rate their general health along a 5-point scale (1=poor, 2=fair, 3=good, 4=very good, 5=excellent).

Physical problems. Six items were employed to measure migrants' physical problems. Participants were asked whether they had had physical limitations that affected their daily work and daily social life during the previous month. Such physical limitations included physical problems that limited them from doing medium heavy level physical work (e.g. lifting cooking gas tank or moving tables); physical problems that limited them from climbing stairs; physical problems that limited them from completing some tasks or housework activities; pain in the body that limited them from doing daily activities; and physical problems that limited them from taking part in social activities. A composite score was obtained by summing these six items; the higher score indicating greater physical problems. The Cronbach's alpha for this scale was 0.63.

Depression symptoms. Depression symptoms were measured using the Center of Epidemiological Studies Depression Scale (CES-D) (Radloff, 1977). The 20-item CES-D was translated and adapted to the Chinese setting (Wang, 1993). Each response was scored from zero to three on a scale of frequency of occurrence of the particular symptom. A composite score (ranged from 0 to 60) was obtained by summing those 20 items; a higher scores indicating a higher frequency of depression symptoms. The Cronbach's alpha of the scale is 0.85.

Health-seeking behaviour. Participants were asked what they would do if they were ill. The health-seeking behaviour was measured by this question with a 4-option response (0=do nothing, 1=self treatment, 2=go to underground clinics, 3=go to regular clinics/go to hospital). During interviews, participants were also asked the main reason for not having sought health-care services (e.g., inconvenience, high cost, no time to visit a doctor, fear to know the health problem, fear to be stigmatized, fear to lose job, illness is not severe, or other reasons).

Living conditions. Three items were used to assess the living condition of migrants, including: (a) the type of dwelling in the city (e.g., apartment building, flat house, underground storage space, or work shed); (b) frequency of changing dwelling (e.g., once every 2-3 years, once per year, or 2-3 times per year or more); and (c) availability of basic facilities in the dwelling (e.g., toilet, kitchen, running water, gas, telephone, TV set, shower or bathtub). To quantify living conditions, a composite score was created by indexing respondents who lived in a substandard residence (e.g., lived in an underground storage space or a work shed), lacked basic facilities in the dwelling (e.g., having no more than half of the eight basic facilities), and changed residence at least two times a year. The resultant living condition composite score ranged from 0 to 3 and was reverse-coded with a higher score indicating a better living condition.

Working conditions. Working condition was assessed using five items. A composite score of employment condition was created by indexing respondents who had worked more than three different jobs in the past, had unstable employment or were self-employed (e.g. street vendor, small store/shop, domestic service), had monthly income below the 25 percentile of the sample, worked at least 10 hours per day, and had fewer than four days off from work per month. The working condition score ranged from 0 through 5 with higher scores indicating better working conditions.

Mobility level. Participants were queried about the entire duration of migration since they first moved from their origin and the number of cities to which they had ever migrated. The ratio of the number of migratory cities to the total migration years was used as the mobility index. This index ranged from 0.06 to 4 with a greater number indicating a higher level of mobility.

Sociodemographic factors. Information about age, gender and level of education (primary or lower, middle school, high school and college or higher) were obtained from the participants. In addition, participants were asked how many years they had been staying in Nanjing city.

Statistical analysis

Overall distributions of all measures by type of migration were assessed using ANOVA or Chi-square test. The differences in health status (e.g., self-rated health, physical problems, depression symptoms, health-seeking behaviours) between intraprovincial migrants and interprovincial migrants were examined using multivariate analysis of covariance (MANCOVA). In the MANCOVA model, dependent variables were self-rated health, physical problems, depression symptoms, and health-seeking behaviour. Type of migration (interprovincial vs. intraprovincial) was employed as a between-subjects factor in the MANCOVA

model. Variables (e.g., level of education, years in the current city, mobility level, and working conditions) showing significant differences between two groups in univariate analysis were included in the MANCOVA model as covariates. Pillais F test (Stevens, 1996) was used for evaluating multivariate significance. Univariate F test was used to test the differences of each measure of health status by type of migration, after controlling for education, years in the current city, mobility, living conditions and working conditions.

Results

Of the 1,842 rural-to-urban migrants, 40.7 per cent were interprovincial migrants and 59.3 per cent were intraprovincial. The sociodemographic characteristics of the two groups of migrants are depicted in table 1. The mean age of this sample was 24.09 years.

Table 1. Sociodemographic characteristics of interprovincial migrants and intraprovincial migrants in Nanjing, China

	Total N (percentage)	Inter-provincial migrants N (per cent)	Intra-provincial migrants N (per cent)	P-value
N (per cent)	1 842 (100.0)	750 (40.7)	1 092 (59.3)	
Age, mean (SD)	24.09 (3.48)	24.02 (3.58)	24.14 (3.41)	0.439
Gender				0.230
Women	765 (41.5)	299 (39.9)	466 (42.7)	
Men	1 077 (58.5)	451 (60.1)	626 (57.3)	
Marital status				0.347
Single	1 170 (67.1)	487 (68.4)	683 (66.2)	
had ever married	573 (32.9)	225 (31.6)	348 (33.8)	
Education				0.000
Primary	113 (6.2)	69 (9.3)	44 (4.1)	
middle school	935 (51.5)	417 (56.3)	518 (48.2)	
higher school	634 (34.9)	208 (28.1)	426 (39.7)	
college or higher	133 (7.3)	47 (6.3)	86 (8.0)	
Years in the city, mean (SD)	3.09 (2.44)	2.77 (2.16)	3.31 (2.59)	0.000
Mobility level, mean (SD)	0.65 (0.51)	0.69 (0.50)	0.63 (0.51)	0.004
Living conditions, mean (SD)	2.07 (0.80)	2.03 (0.82)	2.10 (0.79)	0.061
Working conditions, mean (SD)	2.09 (1.04)	2.01 (1.04)	2.14 (1.04)	0.008

Abbreviation: SD = Standard deviation

About 41.5 per cent were female and 58.5 per cent were male. About 67.1 per cent of participants were single. There were no differences between interprovincial and intraprovincial migrants in terms of age, gender and marital status. However there was a difference in education between the two groups. About 65.6 per cent of interprovincial migrants had no more than middle school education while the percentage was 52.3 per cent for intraprovincial migrants ($p<0.01$). The average duration of staying in the current city among those migrants was 3.09 years for interprovincial migrants vs. 3.31 years for intraprovincial migrants ($p<0.01$). The mobility level between interprovincial migrants and intraprovincial migrants was significantly different (0.69 vs. 0.63, $p<0.01$). There was a difference on working conditions (2.01 vs. 2.14, $p<0.01$) between interprovincial migrants and intraprovincial migrants, but there was no difference in living conditions (2.03 vs. 2.10).

Table 2. Differences in health status and health-seeking behaviour between interprovincial and intraprovincial migrants

	Total	Inter-provincial migrants	Intra-provincial migrants	P-value
N (Percentage)	1 842 (100.0)	750 (40.7)	1 092 (59.3)	
Health status				
Self-rated health, mean (SD)	3.47 (0.96)	3.43 (0.96)	3.50 (0.97)	0.123
Physical problems, mean (SD)	2.09 (1.56)	2.06 (1.55)	2.11 (1.56)	0.508
Depression symptoms, mean (SD)	10.71 (9.02)	11.94 (9.44)	9.86 (8.63)	0.000
Health-seeking behaviour				
Health-seeking behaviour, mean (SD)	1.81 (1.07)	1.72 (1.07)	1.87 (1.08)	0.003
Do nothing	126 (6.9)	60 (8.1)	66 (6.1)	0.008
Self-treatment	880 (48.5)	377 (51.0)	503 (46.7)	
Underground clinics	29 (1.6)	16 (2.2)	13 (1.2)	
Regular clinics/hospital	780 (43.0)	286 (38.7)	494 (45.9)	
Reasons for not visiting health service				0.001
Inconvenience	220 (12.2)	110 (15.0)	110 (10.3)	
High cost	527 (29.2)	228 (31.1)	299 (28.0)	
Fear of finding out about the health problem	22 (1.2)	6 (0.8)	16 (1.5)	
Fear to be stigmatized	7 (0.4)	3 (0.4)	4 (0.4)	
Fear to lose job	118 (6.5)	53 (7.2)	65 (6.1)	
Lack of time	138 (7.7)	45 (6.1)	93 (8.7)	
Illness is not considered severe	639 (35.4)	252 (34.3)	387 (36.2)	
Other reasons	132 (7.3)	37 (5.0)	95 (8.9)	

Abbreviation: SD = Standard deviation

Results in table 2 show that there were differences in the incidence of depression between interprovincial and intraprovincial migrants. The depression symptoms score was 11.94 for interprovincial migrants and 9.86 for intraprovincial migrants ($p<0.01$). There were no differences in self-rated health and physical problems between the two groups.

There was a difference in health-seeking behaviour between interprovincial migrants and intraprovincial migrants ($p<0.01$). Interprovincial migrants were more likely to "do nothing", "self-treatment" or visit "underground clinics" in case of illness, while the latter were more likely to visit "regular clinics/hospitals". For instance, 45.9 per cent of intraprovincial migrants would visit regular clinics/hospital if they had illness, 38.7 per cent of interprovincial migrants would do the same. The main reasons for migrants not visiting health services included "illness is not severe" (35.4 per cent), "high cost" (29.2 per cent), "inconvenience" (12.2 per cent), "no time to visit a doctor" (7.7 per cent), "fear to lose job" (6.5 per cent), "fear to know the health problem" (1.2 per cent) and "fear to be stigmatized" (0.4 per cent). The percentage of reporting "high cost" among interprovincial migrants was higher (31.1 per cent) than that among intraprovincial migrants (28.0 per cent) ($p<0.01$).

MANCOVA results in table 3 show that the type of migration ($F(4, 1724) = 6.26$, $p<0.01$), whether interprovincial or intraprovincial, provides a significant main effect on the overall health status of migrants. Univariate F test results show that interprovincial migrants were more likely to report depression symptoms ($F(1, 1727) = 16.24$, $p<0.01$) and

Table 3. Multivariate analysis of covariance (MANCOCA) of health status and type of migration, adjusting for education, years in the city, mobility level, and working conditions

	Main effect		Covariates			
	F-test	Degree of freedom	Education	Years in the city	Mobility level	Working conditions
Multivariate tests (Pillai's trace)	6.26 **	4, 1724	1.34	3.82 **	1.11	4.95 **
Univariate tests						
Self-rated health	2.58	1, 1727	0.29	0.03	0.01	0.85
Physical problems	0.06	1, 1727	1.86	0.02	0.55	2.05
Depression symptoms	16.24 **	1, 1727	1.07	6.92 **	0.26	19.66 **
Health-seeking behaviour	6.72 *	1, 1727	1.71	8.95 **	3.76	0.37

Note: *p<0.05; **p<0.01.

were less likely to access health-care services ($F(1, 1727) = 6.72$, $p<0.01$) than intraprovincial migrants, after controlling for education, years in the current city, mobility level, and working conditions. Years in the current city, living conditions and working conditions of rural-to-urban migrants were significantly associated with depression and health-seeking behaviour ($p<0.01$). There were no differences between interprovincial migrants and intraprovincial migrants on self-rated health and physical problems.

Discussion

Data in the current study suggest that there were differences in mental health and health-seeking behaviours between interprovincial migrants and intraprovincial migrants. Compared with intraprovincial migrants, interprovincial migrants were more likely to report having depression symptoms and they were less likely to seek formal health services (regular clinics or hospitals). However, there were no differences in self-rated health and physical problems between the two types of migrants.

There might be some possible explanations for the mental health difference between interprovincial migrants and intraprovincial migrants. First, in China, rural-to-urban migrants are highly circular in their movements between origin and destination. On average, rural-to-urban migrants return home two to three times a year (Hare, 1999). Interprovincial migrants, compared with intraprovincial migrants, may infrequently visit their home province in order to save money owing to the longer distance from origin to the destination. The extended separation from family may be a stressor of mental health (Grzywacz and others, 2006) that may explain why interprovincial migrants were more likely to have depression symptoms. Second, interprovincial migrants may have fewer relatives in the destination than intraprovincial migrants do. The lack of social networks and strong bonding social capital (close friends or immediate family with similar characteristics) may have a negative impact on stress reduction (Ferlander, 2007). Third, interprovincial migrants had higher levels of mobility and worse working conditions in the destination compared with intraprovincial migrants. Unstable life conditions and worse working conditions among interprovincial migrants may be the trigger of depression symptoms. Fourth, interprovincial migrants might be subjected to a higher level of stigmatization than intraprovincial migrants owing to their place of origin, accent, and lower socio-economic status (Li and others, 2007).

Interprovincial migrants were less likely to use formal health services and more likely to use the less expensive underground health facilities when they had illness. This could be due to economic reasons. Interprovincial migrants came mainly from less developed rural areas compared with intraprovincial migrants who were from the more developed rural

areas within the province of destination. Therefore, interprovincial migrants may prefer to save money and send more remittances to their homes of origin. This situation may reduce their intention of seeking regular formal health-care services. Data in this study regarding the reasons for not visiting health-care services supports this interpretation since a higher percentage of interprovincial migrants thought that health services were expensive, which was the main reason for not using the services.

The current study has several potential limitations. First, the sample is not a probability sample, therefore, it may not represent migrants in other areas of China. Second, the socio-economic information in the place of origin is not available in this study. The information would have been useful for doing further analysis according to the socio-economic status in the origin and could explain health differences based on the socio-economic and environmental factors in the place of origin (Gushulak and MacPherson, 2006). Likewise, some other data, such as number of close friends or relatives in the destination, are not available. Migrant social networks provide social support through kinship, friendship and shared community origin (Massey and others, 1993), which in turn, may benefit migrants' health (Litwin, 2006).

Despite the limitations, this study provides important data in the field related to migration and health. In addition, this study has policy implications that are useful for local governments in the place of destination. The local government needs to take some measures to improve rural-to-urban migrants' living and working conditions that in turn will be helpful to improve migrants' mental health, especially those that are coming from other provinces. It is necessary to establish community-based migrant support programmes aimed at providing information, counselling and financial support for migrants, especially interprovincial migrants in order to meet their life needs. Those programmes can help to build social networks through social activities for interprovincial migrants in the destination that can reduce migrants' stress. It is important to establish a harmonious social environment to reduce the possible stigmatization and discrimination against interprovincial migrants in the place of destination. Under the current *hukou* system – an institution which restricts population mobility and access to State-sponsored benefits in urban areas – the majority of migrants were not eligible for health insurance (Li, 2010). Existing health insurance systems should therefore make health insurance more readily available in places of destination. Moreover, the provision of health care should respond to the health needs of rural migrants and services should be made more affordable to both intra- and interprovincial migrants.

Acknowledgements

This study was supported by the National Institute of Mental Health (NIMH) through grant No: R01MH064878. The authors wish to thank their colleagues and graduate students at Nanjing University Institute of Mental Health for their assistance in data collection. The authors are greatly indebted to Dr. Philip Guest for his valuable comments. They also want to thank Ms. Joanne Zwemer for her assistance in preparing the manuscript.

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Household Type and Poor Older Persons in India

This paper examines economic deprivations among elderly and non-elderly households in India, using data from the National Family Health Survey-3 (2005-2006). Economic deprivation is measured with respect to the asset poor, derived from a set of economic proxies, such as housing quality, household amenities, land ownership and consumer durables, using the principal component analysis. Results show that the poverty level among older persons living in nuclear households was very high compared with that among older persons living in non-nuclear households or households without any elderly. This paper therefore suggests an analysis of the poverty data by integrating the type of households and living arrangements for the elderly to ensure evidence-based policies and programmes. It also suggests that all elderly living in nuclear households with little or no education be included in existing social pension systems and incentives be provided to promote co-residence among older persons.

By Sanjay K. Mohanty and R.K. Sinha*

With increased longevity and reduction in fertility, many developing countries, including India, are experiencing rapid shifts in the age structure of their population. The shifts in age structure are associated with a changing economy and society. Economic growth resulting from age structure transition (also referred to as the "demographic dividend,) varies across countries and over time (Bloom, Canning and Sevilla, 2003). Yet the economic growth associated with a high proportion of the population being of working age does not necessarily benefit all age groups. On the contrary, population ageing brings forth various social

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and economic issues which cut across geographical space and time. Those include economic insecurity, lower state of physical and mental health, lack of engagement in meaningful activities, inadequate housing facilities and protection of life and property. Those issues, which affect older persons differently depending on their economic status, age and sex, are also compounded by a breakdown of the extended family, low pension coverage, poor access to quality health care, increasing mobility of the younger generation and what one could call a "generation gap".

States Members of the United Nations all pledged to do their utmost to eradicate poverty in all its forms by adopting the Millennium Declaration in 2000 (UN, 2000). Income as well as non-income poverty varies by age, sex, living arrangement and related characteristic of household. Increasingly, there is emphasis on understanding the implications of higher numbers of older persons on the number of those living in poverty. In other words, poverty, ill health and ageing can be strongly interlinked, particularly in the developing world. The relationship between age and poverty in 30 developing countries was found to follow a "U" shape (Barrientos, Gorman and Heslop, 2003). Furthermore, the health of old persons is expected to be worse than that of the rest of the population and the chance of them falling out of the labour force into poverty is high in older age (Gasparini and others, 2007). Hence, realizing the Millennium Development Goals, which ensued from the Millennium Declaration, depends on a significant reduction of poverty among older persons vis-à-vis the rest of the population and on countries' ability to prevent older persons from falling into the poverty trap.

In India, there has been a continuous increase in the older population, both in terms of number and proportion over the last two decades. The proportion of population aged 60 years and over increased from 6. 8 per cent of the population of India in 1991 (57 million) to 7.4 per cent in 2001 (77 million) (Office of the Registrar General and Census Commissioner, 2004). It is projected to represent 12.4 per cent of the total population by 2026 (174 million) (Office of the Registrar General and Census Commissioner, 2006). While the population aged 60 years and over was growing at a rate of 3.04 per cent per annum compared with 1.8 per cent for the total population during 1991-2001, it is likely to increase even faster in the coming years. Moreover, while there has been an accelerated growth in the elderly population, the family structure is in transition, shifting from a joint to a nuclear family system. Unlike many industrialized countries, India does not have a universal social security system to protect older persons against economic insecurity. Retirement benefits, available mostly in the formal sector (mainly for the central or state government employees), benefit less than 10 per cent of the total population. Inadequate social security measures, rising cost of health care and increased mobility of the younger generation are some of the factors that compound the vulnerability of older persons in India.

Following India's independence in 1947, the Third Five-Year Plan (1961-1966) recognized the needs of older persons but left it to local bodies and voluntary organizations to provide necessary support. For the first time, a centrally-sponsored programme, the National Old-Age Pension Scheme (NOAPS), was launched on 15 August 1995, as part of the National Social Assistance Programme (NSAP). The NOASP was implemented by the state or union territories in accordance with the norms, guidelines and conditions laid down by the central government. It was designed for the elderly poor who did not have any regular means of subsistence or financial support from family members. Initially, it aimed at reaching 30 per cent of the poorest older persons and subsequently, all the elderly below the poverty line. The eligibility criterion for old-age pension was 65 years of age (with proof of age) and evidence of his/her destitute status. The pension was fixed at Rs.75 per month per beneficiary in 1995 (1 USD = 44 Indian rupees) and increased to Rs. 200 from 2006 onwards. The state governments were advised to make an equal contribution from their resources so that pensioners received at least Rs. 400 each month. Evaluation studies have confirmed that the scheme is working well (ADB, 2004; Ministry of Rural Development, 1999). However, the growing number of older persons in recent decades and the higher incidence of poverty call for a major revision of poverty reduction strategies.

Measurement of poverty in India

The first attempt at defining and determining a poverty line in India dates back to 1962 when the Planning Commission set up a working group on the recommendations of the Nutrition Advisory Committee of the Indian Council of Medical Research (1958). The calorie norms per person per day were fixed at 2,400 in rural areas and 2,100 in urban areas. The national level cut-off point on the poverty line for the base year (1973-1974) was fixed at a monthly per capita consumption expenditure of Rs.49.99 in rural areas and Rs.56.64 in urban areas. In subsequent years, the price index was used to determine the level of poverty. According to NSSO estimates (2004-2005), the monthly per capita expenditure of Rs.539 for urban and Rs.356 for rural India was used as the cut-off point for the poverty line. The cut-off points were different for each state, and the state-specific poverty line was weighted to derive the national cut-off point. The official poverty line defined a person as poor if the per capita consumption expenditure of the household was below the poverty line. The poverty line does not take into account the age composition or size of household and intra-household allocation of resources. Empirical research suggests that large households take advantage of economies of scale when they share the consumption of goods in the household.

Poverty estimates in India have been the subject of intense debate owing to different recall periods (30 vs. 7 days, 365 vs. 30 days) in various rounds, the composition of fixed baskets of goods and services, application of the price index, change in the composition of food and non-food items, and threshold limit (Kozel and others, 2003; Sundaram and Tendulkar, 2003). For example, in 2004-2005, 28 per cent of India's population was estimated to be living below the poverty line based on uniform recall period (reference period of 30 days each for food and non-food items), compared to 22 per cent based on mixed recall period (30 days recall period for food and 365 days recall period for non-food items). In addition, the estimates are not adjusted for household size and composition and those surveys have limited information on demographic, health and household wealth.

By contrast, data from the Demographic and Health Surveys (DHS) are being increasingly used across different disciplines, including among academia, researchers, donors, planners and policymakers to understand the economic differential in health outcome and health-care utilization in many developing countries (Rutstein and Johnson, 2004). Those surveys do not collect data on income or expenditure of households, but use the composite index based on economic proxies such as housing qualities, household amenities, landholding size, sanitary facilities and consumer durables that reflect the long-term economic status of households. A number of studies have demonstrated that the wealth index is a good proxy of long-term economic status (Filmer and Pritchett, 2001; Sahn and Stifel, 2003), though its agreement with consumption expenditure is not clear (Montgomery and others, 2000; Lindleow, 2006; Howe and others, 2008).

Review of literature

Barrientos, Gorman and Heslop (2003) reviewed a number of quantitative and qualitative studies on old-age poverty in the developing countries. They recommended that understanding of poverty in later life requires acknowledging the contribution of older people to their households, communities and the development process. The poverty level among older persons varies from 64.1 per cent in Ghana to 7.5 per cent in Taiwan Province of China. Mujahid, Pannnirselvam and Doge (2008) carried out a study to understand the impact of social pension in four Asian countries namely, Mongolia, Sri Lanka, Thailand and Viet Nam. They found that older persons face higher incidences of poverty compared with younger age groups. Studies from Sri Lanka also showed that the relationship between age and poverty is "U" shaped, that is, the incidence of poverty declines with age until the age group 55-64, and then gradually increases (19.9 per cent in the age group 60-69 compared with 25 per cent in the 80 years and above category) (World Bank, 2006).

Findings from the Viet Nam Household and Living Standard Survey (2004) found that many of the elderly are poor and the presence of older persons increases the incidence of poverty in the household (Evans, 2006). Gasparini and others (2007) found that poverty rates are lower for the elderly than for the other age groups in countries with a well developed pension system, while there is not much difference between old age and overall poverty rates in countries with weak social security.

Some attempt has also been made to estimate poverty among older persons in India using monthly consumption expenditure data of the National Sample Survey (Pal and Palacious, 2006; Deaton and Paxon, 1995). Pal and Palacious (2006), based on data from the 52nd round of the National Sample Survey (1995-1996) found that households with older persons aged 60 and above were less poor than others across the states. "Survival bias", due to positive correlation of household income and life expectancy and the differences in the demographic composition of households, was partly attributed to such variation. Deaton and Paxon (1995), using the constant per capita consumption expenditure data from the 1987 National Sample Survey showed that the poverty level among households with elderly was lower than that among non-elderly households in six major states of India.

Rajan and Kumar (2003), using data from the National Family Health Survey-2 (NFHS, 1998-1999), highlighted the economic insecurity of older persons in the absence of co-residence with their children. Panda (1998), in his study in rural Orissa found that the economic status of the households with elderly was lower than that of the total households and emphasized the need for additional socio-economic support for these families. Visaria (2001) outlined the health-care needs of older persons and mechanisms available to meet those needs.

Need for the study

Though old-age poverty is a significant issue in developing countries and is likely to become even more acute in the coming decades, the understanding of old-age poverty is deficient (Gasparini and others, 2007; Barrientos, Gorman and Heslop, 2003; Treas and Logue, 1986; Lloyd-Sherlock, 2000). More specifically, the estimate of old-age poverty suffers from methodological problems, lack of international comparability and data limitations in developing countries. Understanding the incidence of poverty among older persons is essential for evidence-based planning and framing social policies.

As mentioned earlier, ageing, poverty and ill health are closely interlinked. The probability of health risk and falling into poverty increases with age. Beyond a certain age, health expenditure can increase sharply.

There is evidence of such rising cost of health-care expenditure in many parts of India. However, health policies and programmes in many developing countries including India have earmarked very few resources for the health-care needs of older persons.

Similarly, social security measures are a critical tool in reducing the incidence of poverty among older persons and studies demonstrate that social pension schemes are effective in alleviating poverty among older persons and their households (Mujahid, Pannnirselvam and Doge, 2008). In the Indian context, less than 10 per cent of older persons are covered by any pension scheme. Consequently, the economic difficulties faced by older persons are more severe than other age groups. Even within the non-poor households, particularly those marginally above the poverty line, the basic needs of older members often remain unmet (Schwarz, 2003).

There has been some research on health and health-care utilization, morbidity and living arrangements in India, but little is known about the extent of poverty and deprivation among the elderly. Alleviating poverty among older persons has not been given priority in many developing countries and there is no official estimate of poverty in India. Understanding the extent of poverty and deprivation in the wake of the breakdown of the joint family structure, increase in female work participation, increased mobility of the younger generation and rise in inequality in income is essential for evidence-based planning, particularly for older persons living in poverty. Against this background, the present paper examines the differentials in economic deprivation with respect to a set of economic proxies among elderly and non-elderly households in India using data from one of the recent rounds of the National Family Health Survey-3 (NFHS, 2005-2006).

Objective, data and methods

The objective of this paper is to understand the incidence of asset poor among elderly and non-elderly households in India using the unit data of NFHS-3. The Demographic and Health Survey (DHS) in India, known as the National Family Health Survey (NFHS), was first conducted in 1992-1993 and subsequently in 1998-1999 and 2005-2006. All three rounds of the survey were nationally representative; they were conducted under a scientific sampling design, with high quality data collection and editing procedures, and investigators underwent rigorous training. The NFHS-3 collected data from a representative sample of 109,041 households and 124,385 women in the country. The survey used mainly three types of questionnaires, namely, the "household question-

naire", the "women's questionnaire" and the "men's questionnaire". The household questionnaire collected detailed information on age, sex, relationship to head of household, marital status and education of each household member along with housing quality, household amenities, consumer durables and size of landholding. Detailed descriptions of the design of the NFHS surveys and the findings are available in the national report (IIPS and Macro International, 2007). The present paper uses the household data generated by the NFHS-3.

The number of variables covered under economic proxies increased from 27 in NFHS-1 (1992-1993) to 32 in NFHS-2 (1998-1999), and 38 in NFHS-3. The NFHS-1 did not provide any composite measure of economic status, at least in the report, while NFHS-2, for the first time, provided a composite index, the standard of living index (SLI) by assigning the arbitrary score to individual variables. In NFHS-3, the wealth index was constructed using 33 variables and was classified into wealth quintiles. The index, so constructed, classified 3 per cent of the urban population in the lowest quintile (bottom 20 per cent), compared with 28 per cent in rural areas (IIPS and ORC Macro, 2007). The wealth index constructed in NFHS-3 has been subject to criticism, as it did not take into account the rural-urban and inter-state variations in economic differentials in a country as large and heterogeneous as India (Misra and Dillip, 2008). Besides, the theoretical rationale in the inclusion or omission of the variables has not been considered (Mohanty, 2009).

Taking these considerations into account, this paper reconstructs the wealth index for urban and rural areas separately, mindful of the theoretical relevance and statistical significance of the variables. The paper uses variables which are sensitive to the poor and estimates the extent of asset poor by type of household. A total of 22 variables for urban areas and 28 variables for rural areas were selected for the construction of the wealth index. The variables used for rural areas are radio, bicycle, watch, pressure cooker, motorcycle or scooter, black and white television, colour television, refrigerator, mobile telephone, non-mobile telephone, electric fan, sewing machine, material used for the floor, material used for the roof, material used for the wall, type of window, separate room for cooking, number of persons per room, source of drinking water, electricity, type of toilet facility, cooking fuel, account in bank or post office, size of landholding, any irrigated land, tractor, thresher and water pump. Similarly, the variables used for urban areas are pressure cooker, motorcycle or scooter, black and white television, colour television, refrigerator, mobile telephone, non-mobile telephone, electric fan, sewing machine, computer, car, material used for the floor, material used for the roof, material used for the wall, type of window, ownership

of house, number of persons per room, source of drinking water, type of toilet facility, cooking fuel, account in bank or post office. The principal component analysis was used to derive the factor scores (served as weight) separately for rural and urban areas. The wealth index was derived from the factor scores, while the analysis was carried out using STATA version 10.

Based on the ascending order of the wealth index, a percentile distribution (100 per cent) was obtained for cumulative household population (de jure) separately for rural and urban areas. The cut-off point of the poor was fixed at 28 per cent and 26 per cent in rural and urban areas, respectively, in accordance with the Planning Commission's (Government of India) estimates of poverty for the year 2004-2005 (based on the mixed recall period). This cut-off point is fixed on the assumption that those who are income poor are also asset poor. In the present paper, the terms "asset poor" and "poor" are used interchangeably. The internal coherence, validity and reliability of the wealth index have been examined. The estimates show greater internal coherence and predict the health differentials of the poor and non-poor.

The dependent variable used in the paper is a composite of asset poor, elderly and type of family. Family is the oldest form of institution and forms the backbone of India's social structure. Based on the kinship structure, families may be classified as nuclear and joint. Nuclear families usually consist of any of the following households: a) a single aged adult; b) husband and wife without children; c) father, mother and unmarried offspring; d) father or mother with unmarried offspring; and e) unmarried brothers or sisters. By contrast, the joint family has greater generation depth (that is, three or more) compared with nuclear families. Generally, nuclear families are smaller in size while joint families are larger. For the first time, the NFHS-3 provides a variable to take into account the structure of the family (type of household classified as nuclear and non-nuclear) in the data set. The nuclear household as defined in NFHS-3 is comprised of a married couple or a man and/or woman living alone or with unmarried children (biological, adopted or fostered) with or without unrelated individuals (IIPS and Macro International, 2007). The authors have used the variable in understanding the living arrangements and economic deprivations of older persons.

Results

Household type and older persons

Distribution of households by the number of elderly and type of household is shown in table 1. In 2005-2006, in India, about two-third of the households did not house any elderly, one-fourth housed one, while

one-tenth housed two or more older persons. Rural-urban differences in the distribution of the older population were small. Information on type of household, that is, nuclear and non-nuclear households was combined with the presence or absence of an elderly in the same household to derive a composite variable, namely, household by type of elderly. The composite variable has four mutually exclusive groups, namely,

(a) Nuclear household with one or more elderly

(b) Nuclear household without an elderly

(c) Non-nuclear household with one or more elderly, and

(d) Non-nuclear household without an elderly.

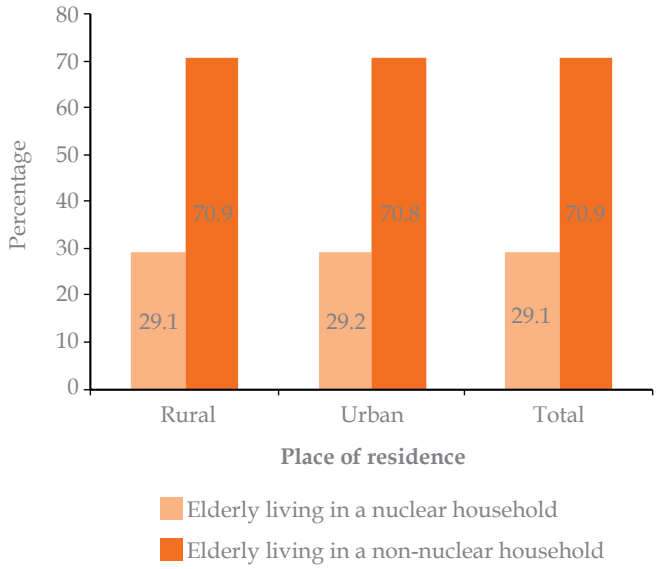
The terms "household" and "family" are used interchangeably in this paper.

The distribution of older persons among the four type of households mentioned above is shown in table 1. Majority of the households in India were nuclear households without an elderly person (51 per cent), followed by non-nuclear households with one or more elderly person (24 per cent), non-nuclear households without an elderly person (16 per cent) and nuclear households with one or more elderly person (9 per cent). Among all elderly households, about one third of the elderly resides in nuclear families, irrespective of place of residence (figure 1).

Table 1. Percentage distribution of households by number of older persons and household type in India, 2005-2006

Number of elderly/ Type of household	Rural	Urban	Total
Number of elderly			
None	64.8	71.7	67.1
One	25.7	20.9	24.1
Two	9.1	7.1	8.4
Three and more	0.4	0.2	0.3
Nuclear household with elderly	9.9	8.4	9.4
Nuclear household without an elderly	49.4	54.6	51.1
Non-nuclear household with elderly	25.3	19.9	23.5
Non-nuclear household without an elderly	15.4	17.1	16.0
Nuclear	59.3	63.0	60.5
Non Nuclear	40.7	37.0	39.5
Total (percentage)	100	100	100
N	73 461	35 579	109 040

Figure 1. Among all elderly households, percentage of elderly living in nuclear and non-nuclear households, India, 2005-06



Further, the number of de jure household members by type of household is shown in table 2. Nuclear households with elderly are small in size compared with others. Among all nuclear households with elderly, 24 per cent were single-member households, 40 per cent were two-member households and 37 per cent were three-member or more. By contrast, only 10 per cent of the non-nuclear households with elderly had less than four members. The estimated mean number of members in nuclear households with elderly was 2.51 compared with 4.1 in nuclear households without an elderly, 6.41 in non-nuclear households with elderly and 5.94 in non-nuclear households without elderly. The mean household size of a nuclear household with an elderly was the smallest in size and was lower in rural areas than it was in urban areas.

Further, among all nuclear households with elderly, 94 per cent of the household heads were aged 60 years and above compared with 54 per cent among non-nuclear households with elderly. Also, 26 per cent of the household heads were either widowed or divorced or separated compared with 18 per cent in non-nuclear households with elderly (table not shown).

Table 2. Percentage distribution of household size (de jure) by type of households and place of residence, India, 2005-2006

Household size	Nuclear households with elderly	Nuclear households without elderly	Non-nuclear households with elderly	Non-nuclear households without an elderly
Rural				
1	24.8	5.1	0	0
2	41.5	11.2	3.2	3.5
3	14.5	17.1	7.4	8.5
4+	19.3	66.6	89.3	87.9
Mean household size	2.45	4.21	6.47	6.12
Total number of households (N)	7 259	36 314	18 577	11 276
Urban				
1	20.6	7.1	0	0.1
2	36.6	10.0	3.2	8.3
3	18.9	20.8	7.0	10.0
4+	23.9	62.1	89.8	81.7
Mean household size	2.65	3.90	6.26	5.60
Total number of households (N)	2 987	19 530	7 063	6 082
Total				
1	23.6	5.8	0	0.1
2	40.0	10.8	3.2	5.2
3	15.8	18.4	7.3	9.0
4+	20.7	65.0	89.4	85.7
Mean household size	2.51	4.10	6.41	5.94
Total number of households (N)	10 246	55 745	25 639	17 359

Asset poor by type of household and elderly

To understand the wealth differentials among elderly and non-elderly households, the distribution of wealth index by type of households in three groups, namely, elderly living in nuclear households, elderly in non-nuclear households and households without an elderly is shown in figures 2 (a) –(c)

The figures depict the relatively lower score among older persons living in nuclear households compared with older persons living in non-nuclear households in rural India. A comparison between the distribution of composite score among the elderly living in nuclear households and

Figure 2 (a). Distribution of composite wealth index (derived using PCA) among nuclear households with one or more elderly in Rural India, 2005-2006

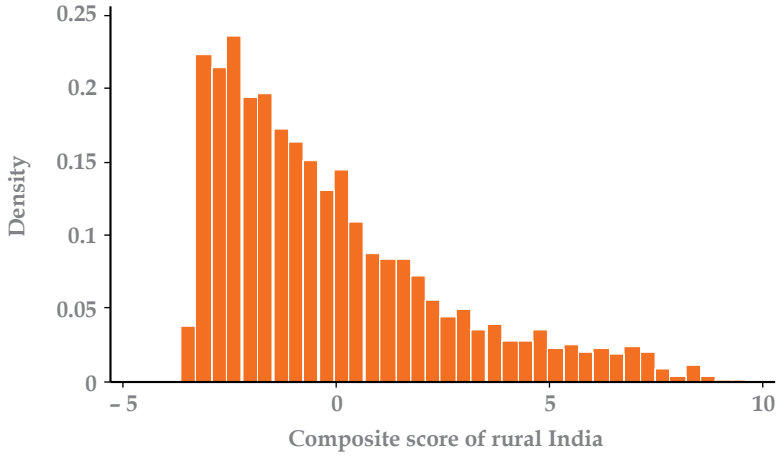


Figure 2 (b). Distribution of composite wealth index (derived using PCA) among non-nuclear households with one or more elderly in rural India, 2005-2006

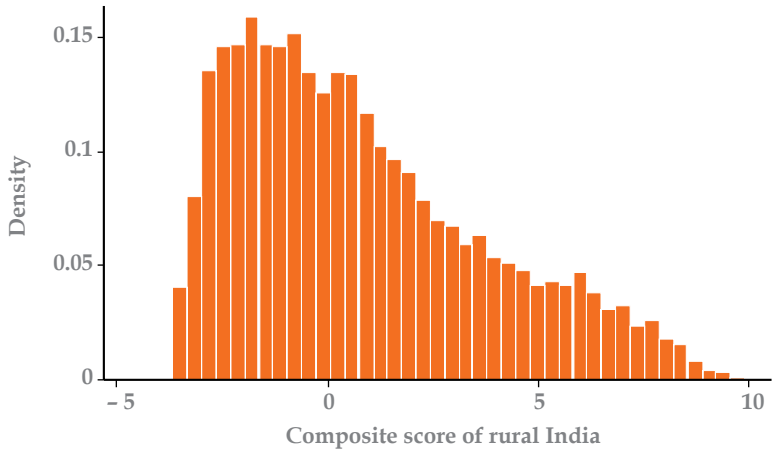
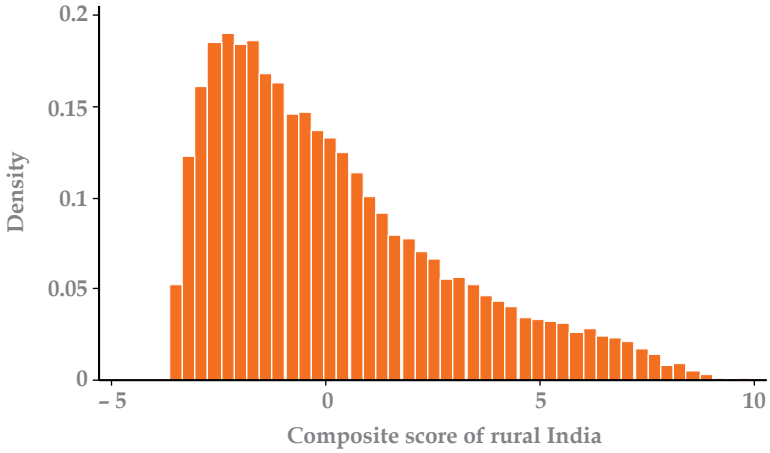


Figure 2 (c). Distribution of composite wealth index (derived using PCA) among households without an elderly in rural India, 2005-2006



that of households without an elderly person shows that elderly living in nuclear households are economically disadvantaged. Similar differences are found in urban areas.

Based on the composite index and cut-off point for the poor, the poverty estimates among the elderly by type of household and place of residence are shown in table 3.

The proportion of asset poor was higher among nuclear households compared with non-nuclear households. Further, among the four groups, the proportion of asset poor was highest among the elderly living in nuclear households. For example, about 35 per cent of nuclear households with an elderly were poor compared with 30 per cent among nuclear households without an elderly person, 22 per cent among non-nuclear households with one or more elderly person, and 23 per cent among non-nuclear households without an elderly person. This is in spite of the fact that the wealth index is a reflection of accumulation of assets over a long period of time, for in such cases, it is expected that households with older persons will have a higher score in the wealth index than those households without an elderly person. However, the differences in asset poor between an elderly person living in a nuclear household and non-nuclear households without an elderly person were small and insignificant. A relatively large proportion of the nuclear households without an elderly person might have just started working life and so were relatively less wealthy. The patterns were similar in both rural and urban areas, yet the differences were large. In rural India,

Table 3. Percentage of asset poor by type of households in India, 2005-2006

Type of households with or without elderly	Rural		Urban		Total	
	Poor	N	Poor	N	Poor	N
Nuclear households with elderly	36.1	7 198	29.6	2 961	35.1	10 158
Nuclear households without an elderly	31.3	36 070	27.8	19 258	30.0	55 328
Non-nuclear households with elderly	21.6	18 417	22.0	6 999	21.5	25 416
Non-nuclear households without an elderly	22.9	11 195	23.1	6 027	22.7	17 223
Nuclear households	32.1	43 289	28.1	22 235	30.7	65 524
Non-nuclear households	22.1	29 664	22.4	13 032	22.2	42 676
All	28.0	35 268	26.0	72 932	27.3	109 041

36 per cent of the nuclear households with one or more elderly person were poor compared with 23 per cent among non-nuclear households without an elderly person. The authors acknowledge that the elderly classified as non-poor households above the cut-off point of asset score might not have many of their basic needs fulfilled, and discrimination may prevail in the care of the elderly in non-poor households.

Those findings are contrary to earlier findings on poverty among older persons in India. Pal and Palacious (2008) indeed found a higher incidence of poverty among non-elderly households compared with elderly households even after controlling for household size and composition. They attributed high mortality rates among the poor for such differences. However, these inferences may change if poverty is estimated by integrating the type of households with and without the elderly. The prevalence of asset poverty in nuclear households was substantially higher than that in non-nuclear households in both rural and urban areas of the country.

In order to understand the ownership of consumer durables among older persons, the mean of 12 consumer durables (radio, bicycle, watch, pressure cooker, motorcycle or scooter, sewing machine, black and white television, colour television, refrigerator, mobile telephone and non-mobile telephone) was computed and is presented in table 4.

Table 4. Mean number of consumer durables by type of households and place of residence, India, 2005-2006

Type of households	Rural		Urban		Total	
	Mean	SD	Mean	SD	Mean	SD
Nuclear households with elderly	1.57	1.92	4.44	3.11	2.41	2.67
Nuclear households without an elderly	2.27	1.97	4.76	2.75	3.14	2.56
Non-nuclear households with elderly	2.99	2.29	5.63	2.92	3.72	2.74
Non-nuclear households without an elderly	2.96	2.18	5.03	2.66	3.68	2.56
All	2.49	2.13	4.95	2.83	3.29	2.65

Note: SD = Standard deviation

The mean number of consumer durables of the elderly living in non-nuclear households was 54 per cent higher than that of the elderly living in nuclear households. The standard deviation is similar across the groups. Rural-urban differences in mean number of consumer durables are quite distinct. This corroborates the previous finding that the poverty level is higher among older persons living in a nuclear household, whether in rural or urban setting. Thus, the size of households with elderly is not only small, but also the poorest among the four groups.

Household type and asset poverty by head of household

As the present study attempts to examine the differentials in economic deprivation between elderly and non-elderly households, the latter (non-elderly nuclear and non-elderly non-nuclear households) were combined for further analysis. The socio-economic status of the household was found to be directly linked to the education and occupation of the head of the household. The differentials in percentage of asset poor by age, sex, marital status and education, of the head of the household, and caste and religion were computed and are shown in table 5. Among nuclear households with elderly, the proportion of asset poor increased with the age of the head of household, from 22 per cent in the age group below 60 years to 39 per cent for the age group 75 years and over. The pattern was found to be similar in both rural and urban areas. The proportion of asset poor was found to be higher for all subgroups among nuclear households with one or more elderly compared with other type of households.

Table 5. Percentage of poor by type of household and selected characteristics of head of household, India, 2005-2006

Characteristics	Rural			Urban			Total		
	Nuclear house-holds with elderly	Non-nuclear households with elderly	House-holds without an elderly	Nuclear house-holds with elderly	Non-nuclear households with elderly	House-holds without an elderly	Nuclear house-holds with elderly	Non-nuclear households with elderly	House-holds without an elderly
Age									
Less than 60 years	25.6	23.7	29.3	16.4	24.3	26.7	22.0	23.9	28.4
60-74 years	36.3	20.3	–	29.1	20.3	–	34.2	20.3	–
75 years and over	39.4	16.1	–	39.3	18.2	–	39.3	16.7	–
Sex									
Male	33.6	21.1	28.7	25.7	20.7	26.1	31.3	21.0	27.7
Female	44.5	24.7	32.8	44.1	27.8	31.8	44.3	25.8	32.5
Marital Status									
Currently married	32.2	20.8	28.8	24.4	20.6	26.1	29.9	20.8	27.9
Widowed/divorce/ separated	46.6	24.4	33.2	44.8	26.0	34.6	46.1	24.9	33.7
Never married	38.7	28.2	29.7	46.4	26.3	22.4	41.4	27.7	25.7
Education									
No education	46.3	32.4	44.5	60.5	47.9	59.0	48.7	35.0	47.3
Primary	23.3	17.8	26.1	39.8	26.7	40.6	27.6	19.8	30.2
Secondary	13.6	9.8	14.5	13.7	13.6	19.4	13.6	11.2	16.6
Higher	0	3.4	3.1	0.5	1.0	2.9	0.4	1.9	2.9

(continued)

Table 5. *(Continued)*

Characteristics	Rural			Urban			Total		
	Nuclear house-holds with elderly	Non-nuclear households with elderly	House-holds without an elderly	Nuclear house-holds with elderly	Non-nuclear households with elderly	House-holds without an elderly	Nuclear house-holds with elderly	Non-nuclear households with elderly	House-holds without an elderly
Caste									
Scheduled caste (SC)	44.5	31.6	36.4	50.3	37.3	42.5	45.7	33.0	38.2
Scheduled tribe (ST)	60.1	43.2	50.8	57.6	42.1	43.6	59.9	43.1	49.9
Other Backward	36.0	20.5	25.8	39.8	28.6	31.5	37.0	22.5	27.7
Class (OBC)	20.7	10.8	18.9	14.0	11.3	14.7	17.8	11.0	17.0
Others									
Religion									
Hindus	36.6	21.9	29.3	29.6	29.6	26.4	34.7	21.9	28.3
Muslims	40.6	23.6	33.4	38.8	22.0	32.2	40.0	24.9	32.9
Christians	20.7	14.2	20.8	20.6	27.2	21.7	20.0	14.0	21.1
Others	24.4	11.8	18.1	11.2	13.6	13.7	20.2	10.3	16.4

Note: - means not applicable

Among all three types of households, the proportion of asset poor was higher among female-headed households than among male-headed households, widowed/divorced/separated and households with heads who had had no education. Even among those four factors, the variations in poverty level were larger by educational level of head of households cutting across the type of households. Among older persons living in nuclear households where the head of household had had no education, about half were found to be poor while the proportion declined to less than 1 per cent among those households where the head of household had received higher levels of education. Similar differences were observed for other types of households.

Thus, educational levels of the head of household along with the classification of family type by the elderly can help to identify the elderly poor in need of social support. Among female-headed households in nuclear families with an elderly person, the proportion of the poor was 44 per cent compared with 26 per cent among non-nuclear households with one or more elderly person, and 33 per cent among households without an elderly person.

Similar differences were found by caste and religion of members of the household. The proportions of asset poor were found to be highest among Scheduled Tribes living in nuclear households with older persons, followed by Scheduled Castes and Other Backward Classes. The patterns were similar for other types of households both in rural and urban areas. The differentials in asset poor by religion of household showed that among nuclear households with the elderly, it was higher among Muslims followed by Hindus and Christians, both in rural and urban areas. However, this pattern did not hold true in urban areas for other types of households. For example, in urban areas and among non-nuclear households with an elderly, the proportion of poor was higher among Hindus followed by Christians and Muslims.

State differentials in asset poor by type of households

The differentials in poverty level by type of household for major states of India are shown in table 6. The proportion of asset poor by type of households was highest among nuclear households with one or more elderly in all the major states with the exception of Punjab and Haryana. The latter are two economically progressive states in which the poverty level is generally lower than elsewhere in the country. The proportion of asset poor among the elderly living in nuclear households were highest in the states of Orissa and Jharkhand (62 per cent each) followed by Madhya Pradesh and Chhattisgarh (56 and 46 per cent, respectively). By contrast, it was lowest in the states of Punjab and Kerala. Those estimates of asset poor are in accordance with the state-level estimates released by the Planning Commission, Government of India 2004-2005.

Table 6. Percentage of poor by type of households with or without elderly in states of India

States	Nuclear households with elderly	Non-nuclear households with elderly	Households without an elderly
Andhra Pradesh	26.3	18.6	23.6
Assam	38.8	26.8	34.7
Bihar	51.6	35.5	47.7
Gujarat	21.3	11.3	14.0
Haryana	8.6	7.2	9.8
Jammu and Kashmir	10.1	3.7	6.7
Karnataka	20.5	16.3	18.9
Kerala	5.2	4.2	4.5
Madhya Pradesh	55.6	34.6	43.8
Maharashtra	25.5	14.5	16.8
Orissa	61.8	37.1	50.7
Punjab	4.6	2.7	7.6
Rajasthan	36.5	23.6	29.6
Tamil Nadu	34.0	21.3	23.8
West Bengal	34.6	19.5	32.1
Uttar Pradesh	44.5	25.7	34.0
Chhattisgarh	46.3	29.1	40.3
Jharkhand	61.8	45.8	54.0
Uttaranchal	14.7	6.2	10.9
India	35.1	21.5	28.4

Logistic regression was used to identify the most significant predictor of the poverty. The dependent variable was dichotomous, that is either 0 for poor or 1 for non-poor. The logistic regression was estimated for India and three selected states. These states had been selected for the following reasons: Orissa has a higher incidence of poverty, while the state of Maharashtra, a progressive state is close to the replacement level of fertility, and the state of Kerala has a higher proportion of elderly population. The odd ratios and the statistical significance of the coefficient are shown in table 7.

All the predictors were found to be significant for India, albeit not for the above-cited states. Educational level and age of head of household were significant predictors of poverty cutting across the states. Households with heads who had a higher educational level were found more likely to be non-poor. The type of family and caste appeared to be significant predictors in the states of Orissa and Maharashtra, but not in Kerala. In general, the findings support the bivariate analyses and reflect the regional diversity of the country.

Table 7. Result of logistic regression showing the odds of being classified as poor by social and demographic characteristics (Dependent variable: 0= Poor and 1= Non-poor)

Variable	Odd Ratio			
	India	Orissa	Maharashtra	Kerala
Type of households				
Nuclear households with an elderly (R)	1	1	1	1
Non nuclear households with an elderly	1.88 ***	2.60 ***	1.96 ***	1.22
Households without an elderly	1.42 ***	1.78 ***	1.68 ***	1.18
Education of head of household				
No education (R)	1	1	1	1
Primary	1.97 ***	1.98 ***	2.39 ***	1.72 **
Secondary	5.27 ***	6.78 ***	7.32 ***	7.10 ***
Sex of head of household				
Male (R)	1	1	1	1
Female	1.21 ***	1.10	1.25 **	0.77
Caste				
Scheduled caste (SC) (R)	1	1	1	1
Scheduled tribe (ST)	0.75 ***	0.54 ***	0.60 ***	0.63
Other Backward Class (OBC)	1.46 ***	1.88 ***	1.50 ***	1.92 **
Others	2.56 ***	2.55 ***	2.04 ***	2.93 ***
Religion				
Hindus (R)	1	1	1	1
Muslims	0.71 ***	0.31 ***	0.67 ***	2.80 ***
Christians	2.39 ***	1.11	2.1	0.76
Others	2.53 ***	0.95	0.93	0.31
Age of head of household				
Less than 31 years (R)	1	1	1	1
31-49 years	1.69 ***	1.56 ***	2.37 ***	2.85 ***
50 years and over	2.69 ***	2.45 ***	4.74 ***	5.98 ***
Constant	0.36 ***	0.10 ***	0.25 ***	0.75 ***

Note: R = reference category
***: p≤ 0.01 and ** p≤0.05

Conclusion

This study attempts to understand the level of economic deprivation among the elderly and non-elderly households in India by type of family using the data from the National and Family Health Survey-3. A composite wealth index was computed using the principal component analysis on a set of economic proxies such as housing amenities and quality, size of landholding and consumer durables. The cut-off point for the poor was equated with that of the estimates of the Planning Commission, Government of India, 2004-2005 based on the uniform

recall period. The implicit assumption is that those who are income or consumption poor are also asset poor. The type of household along with the presence or absence of the elderly forms the basis of analysis.

The rationale of the paper was not to provide the exact estimates of poor by type of household and elderly, but to understand the economic deprivation experienced by older persons living in different households. The wealth index relates to an accumulation of assets over a long period of time and it is expected that households with elderly persons would hold a higher score than those households without. Results, however, show that the proportion of asset poor was highest among older persons living in nuclear households. Moreover, among older persons living in nuclear households, the level of poverty was higher among female-headed households, Scheduled Tribes and households where the head had no education. The educational level of the head of the household may explain the large variation in the levels of poverty. The logistic regression analysis therefore confirms that the odds of being poor are greater among older persons living in nuclear families with a low educational level among Scheduled Tribes and female-headed households.

Policy recommendations

On the basis of the above findings, the following policy recommendations were derived:

(a) There is a need to prioritize the social pension programme for older persons living in nuclear households with little or no education, as many of them are living in difficult conditions owing to high levels of poverty. Within the existing programme, there is a further need to include all older persons living in nuclear households without or with little education under the National Old-Age Pension Scheme (NOAPS).

(b) Policies should provide incentives to increase co-residence with the elderly and encourage non-nuclear households.

(c) Further research is required in order to better understand the incidence of consumption poverty (official estimates) and multidimensional poverty in later life, using data from National Sample Survey and other large-scale population-based surveys

(d) The details about the type of family or household needs to be included in surveys related to older persons which then allow for analysis of the incidence of poverty by type of household.

(e) Longitudinal studies which periodically assess and understand the well-being of older persons are also needed, if we are to understand and respond to the growing challenges faced by elderly persons and households living in poverty.

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Consistency in Reporting Contraception among Couples in Bangladesh

This paper evaluates the level and determinants of consistency in reporting contraception among couples using the couple dataset (N=2249) of the Bangladesh Demographic and Health Survey (DHS). This paper reveals that 76.5 per cent of couples in Bangladesh consistently reported contraception. Significant community effect was found in the data, which means that couples from different communities having similar characteristics will show different levels of consistency in reporting contraception. This paper recommends that DHS enhance the quality of questionnaires in order to improve the level of consistency in reporting contraception use. Programmes should emphasize effective communication within couples. Likewise, communicating family planning messages in the mass media should be further strengthened.

By Mohammad Amirul Islam*

The ability to assess the accuracy of husbands' reports alongside those of their wives potentially provides a complete picture of couples' contraceptive use behaviour. Possible inconsistencies in partners' reports are a cause of serious concern. Such issues merit further investigation because they challenge the accuracy of the contraceptive prevalence rate (CPR), which is traditionally measured based on women's direct response to the surveys (Becker and Costenbader, 2001).

In different studies discrepancies between husbands' and wives' responses have been evident (Goyal, 1990; Karra and others, 1997; Khan and Singh, 1987). Discrepancies between spouses' answers about

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contraception and reproductive decisions have been explained as the respondents' attempt to provide a socially acceptable answer (Becker and Costenbader, 2001; Karra, Stark and Wolf, 1997).

Generally, married men report higher levels of contraceptive use than do married women (Ahmed, Schellstede and Williamson,1987; Ashraf and others, 2000; Ezeh, Seroussi and Raggers, 1996). According to an analysis of data from the Demographic Health Survey (DHS) conducted by Ezeh, Seroussi and Raggers, the discrepancy was largest in two Kenyan DHSs, in both of which the gap between male and female responses was over 20 percentage points. In Ghana, there was a 14 percentage point difference. In just two countries, Mali and Morocco, did women report slightly higher rates of contraceptive use than men (Ezeh, Seroussi and Raggers, 1996).

One possible explanation behind men's overreporting of contraceptive use, especially condom use, may be that men tend to report using condoms for extramarital sexual intercourse. Another possibility is that some women may not acknowledge using contraception, mainly female methods, to survey investigators, since they tend to use such methods without their husband's knowledge (Robey and Drennan, 1998). A study by Ahmed, Schellstede and Williamson (1987) concluded that Bangladeshi women were underreporting condom use. A similar situation was evident in Uttar Pradesh, India (Koenig, Simmons and Misra, 1984).

In the 1999-2000 Bangladesh Demographic and Health Survey (BDHS), a notable difference was found by NIPORT, M.A. and ORCM (2001) on the current use of contraceptives by currently married men (63.5 per cent) and currently married women (53.8 per cent). Misreporting, misunderstanding of a method, lack of spousal communication and reporting method use outside marriage (especially for husbands) may be among the possible reasons for such discrepancies.

Family planning policies and contraceptive procurement plans for a country are made using the current contraceptive prevalence rate and future projections based on that data. Women's direct responses to survey questions are traditionally used to measure the contraceptive prevalence rate. The existence of notable discrepancies between the responses of husbands and those of wives hampers the entire process. Hence, research on consistency in reporting contraceptive use between spouses is important as a high level of inconsistency may result in flawed interpretations and consequently affect the policies formulated on the basis of such data.

This paper then aims to evaluate the level of and determinants of consistency in reporting contraception among couples in Bangladesh (using nationally representative data) and the implications for population policy.

Data

This paper uses data from the 1999-2000 BDHS (NIPORT, M.A. and ORCM, 2001). BDHS is a nationally representative, two-stage sample which classifies Bangladesh into six administrative divisions, 64 districts and 490 *thanas*. In rural areas, *thanas* were divided into *unions* and then *mauzas*, a land administrative unit. Urban areas were divided into *wards* and then *mahallas*. The number of primary sampling units (PSUs) was 341 in the BDHS survey, including 99 in urban and 242 in rural areas. Since the objective of the BDHS was to provide separate estimates for each division as well as for urban and rural areas separately, it was necessary to increase the sampling rate for Barisal and Sylhet divisions and for urban areas relative to other divisions, so that the DHS sample was not self-weighting.

A systematic sample of 10,268 households was then selected from this list. Every third household was selected for the men's survey. Finally, 10,544 ever married women aged 10 to 49 years and 2,556 currently married men aged 15 to 59 were successfully interviewed. A data set including 2,249 couples was generated based on the two above-cited data sets (women and men), for the current study. It should be noted that neither the 2004 BDHS nor the 2007 survey collected information on contraception from men; hence, the analysis could not make use of those recent data sets.

BDHS couple data is hierarchical in nature, couples being nested into communities (PSUs) and communities into divisions. Because of the hierarchical nature of the BDHS data, there may be some community effects in the data as couples clustered within a community may have some characteristics in common. For example, if a family planning clinic operates within the community, the couples in that community may exhibit similar contraceptive behaviour. BDHS data provide a unique opportunity to examine such community effects using multilevel models (Islam, 2008).

Methods

Only variables significant in the bivariate analysis were considered for the regression analysis, except the variables area of residence (rural-urban residence) and division which was retained in the model to control for the over sampling in two divisions (Sylhet and Barisal) as well as in urban areas. A single-level binary logistic regression model was conducted using SPSS (version-16.0) considering only the variables significant in the regression analysis stage along with the variables, area of residence and division. The possibility of multicollinearity was also considered in the regression analyses. The selected independent

variables in the final single-level model were then considered in the two-level random intercept binary logistic regression model (Goldstein, 2003; Rasbash and others, 2004) in MLwiN (version 2.0). All possible interactions among the predictor variables were considered. The response variable considered in the regression analysis was "consistent reporting of contraception" (yes=1, no=0).

Two-level random intercept binary logistic regression model

The above represents an extension of the single-level binary logistic regression model. Let the binary response be Y_{ij} which equals 1 if couple i in community j reported contraception consistently, and 0 otherwise. Then the probability of consistent reporting of contraceptives is P_{ij}=Pr (Y_{ij}=1). If K independent variables X_{ij1}, X_{ij2}, …, X_{ijK} are measured at the couple level (level 1), then a two-level random intercept model is as follows:

$$\text{logit}(P_{ij}) = \beta_{0j} + \sum_{l=1}^{K} \beta_l X_{ijl}$$

with

$$\beta_{0j} = \beta_0 + u_{0j},$$

where β_0 is a fixed component and u_{0j} is a community-specific component, the random effect which is assumed to follow a normal distribution with mean zero and variance σ^2_{u0}. When σ^2_{u0} is found to be significant in the model, the authors conclude that there is a community effect in the model, which means that two couples from different communities with same set of characteristics will show different influences on the response variable (consistent reporting of contraception).

Results

Consistency in reporting contraceptive use

Among the couples, 76.5 per cent provided a consistent response, in that both partners said that they were either currently using the same method or not using any method during the survey period (table 1). About 65 per cent of husbands reported that they were using a family planning method, compared with 59.5 per cent of wives (table 1). The extent of agreement regarding different methods can be found in the main diagonal elements of table 1. Periodic abstinence, the pill and condoms

Table 1. Comparison of reported contraceptive use by spouses: distribution of couples according to husband's and wife's reported current contraceptive use status, Bangladesh, 1999-2000

(Percentage)

Wife: current contraceptive method	Husband: current contraceptive method											
	Not using	Pill	IUD	Injec-tions	Con-dom	Female sterili-zation	Male sterili-zation	Periodic absti-nence	With-drawal	Nor-plant	Other method	Total
Not using	**30.1**	3.5	0.0	0.7	1.0	0.2	0.0	4.1	0.6	0.0	0.2	40.5
Pill	0.8	**23.3**	0.0	0.3	0.4	0.0	0.0	0.7	0.0	0.0	0.1	25.7
IUD	0.3	0.2	**1.3**	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.0	2.1
Injections	0.4	0.6	0.0	**6.2**	0.2	0.0	0.0	0.1	0.0	0.0	0.0	7.6
Condom	0.3	0.3	0.0	0.0	**4.0**	0.0	0.0	0.4	0.0	0.0	0.0	5.1
Female sterilization	0.1	0.1	0.0	0.0	0.0	**6.4**	0.1	0.0	0.0	0.0	0.0	6.8
Male sterilization	0.0	0.0	0.0	0.0	0.0	0.0	**0.4**	0.0	0.0	0.0	0.0	0.4
Periodic abstinence	1.8	0.5	0.1	0.2	0.4	0.0	0.0	**2.7**	0.3	0.0	0.0	6.0
Withdrawal	0.9	0.5	0.0	0.0	0.3	0.0	0.0	1.2	**1.4**	0.0	0.0	4.4
Norplant	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.3**	0.0	0.4
Other method	0.2	0.2	0.0	0.0	0.1	0.0	0.0	0.2	0.0	0.0	**0.4**	1.1
Total	**34.9**	**29.3**	**1.5**	**7.5**	**6.5**	**6.7**	**0.6**	**9.6**	**2.4**	**0.3**	**0.8**	**100.0**

are the methods where most of the discrepancies in reporting current use were found. Most of the discrepancies were observed when husbands reported using one of these methods while wives reported to the contrary. The reasons behind a husband's reporting the use of the pill while the wife reported non-use may be that husband paid for the pill or collected it, or knew that his wife had started using it, but for some reason she did not use it or discontinued using it without informing her husband. Wives are found to report condom use less than their husbands. A higher reporting of the use of periodic abstinence among men than among women was observed. This may be due to the confusion between periodic and long-term abstinence. Another reason may be that husbands are intentionally abstaining from sex as a family planning method without informing their wives, most of which is reported as non-use by the wives. Agreement between spouses on female sterilization was found to be very close. While wives reported having performed female sterilization, some of the husbands reported currently using other methods (not condom which is possible for protection against sexually transmitted infections or in the event of extramarital sexual intercourse). It is not clear, however, if these husbands were informed that their wives might have undergone female sterilizations.

Bivariate analyses

Table 2 reveals the relationship of consistent reporting of contraception with some important socio-economic and demographic characteristics of the husbands, wives and couples. Both current use and non-use were considered in measuring the consistent reporting. Consistent reporting of contraception was found to be high among husbands aged 25 to 39. The report of about 78 per cent of the husbands in that age group regarding their current contraceptive use was found to be consistent with that of their wives. Husbands from Rajshahi division provided the highest level of consistency in reporting of contraception (80.4 per cent), whereas those from Khulna division exhibited the lowest level (70.3 per cent). Surprisingly, reporting was found to be highly consistent among husbands in rural areas.

Education level of the husbands was not significantly associated with consistency of reporting of contraception although the direction of the association was negative. Religion of husbands also did not have a significant association with consistency in reporting of contraception use. Consistency was found to be the highest among husbands with no living children (81.1 per cent) and lowest among husbands with five or more children (72.1 per cent). Husbands' access to television and radio seem to increase the consistency in reporting of contraception while access to newspapers seems to decrease it. Consistency in reporting of

Table 2. Consistency in reporting contraception by demographic and socio-economic characteristics of husbands, wives and couples

Characteristics	Total	Different use response (per cent)	Same use response (per cent)
Husband			
Age (p=0.201)			
Less than 25 years	126	24.6	75.4
25-39 years	1 120	21.9	78.1
40 years and over	1 003	25.1	74.9
Division (p=0.002)			
Barisal	199	29.6	70.4
Chittagong	389	21.1	78.9
Dhaka	582	22.0	78.0
Khulna	404	29.7	70.3
Rajshahi	460	19.6	80.4
Sylhet	215	22.8	77.2
Area of residence (p=0.067)			
Urban	690	25.9	74.1
Rural	1 559	22.4	77.6
Education (p=0.764)			
No education	740	22.3	77.7
Primary	666	23.6	76.4
Secondary	529	24.0	76.0
Higher	314	25.2	74.8
Religion (p=0.895)			
Islam	1 925	23.4	76.6
Other	324	23.8	76.2
Number of living children (p=.063)			
0	201	18.9	81.1
1-2	939	23.4	76.6
3-4	700	22.3	77.7
5 and above	409	27.9	72.1
Access to newspaper (p=.055)			
No	1 587	22.4	77.6
Yes	662	26.1	73.9
Access to television (p=.069)			
No	996	25.3	74.7
Yes	1 253	22.0	78.0
Access to radio (p=.042)			
No	1 080	25.4	74.6
Yes	1 169	21.7	78.3
Respondent approves family planning (p=.607)			
Yes	1 907	23.3	76.7
No	342	24.6	75.4

(continued)

Table 2. *(Continued)*

Characteristics	Total	Different use response (per cent)	Same use response (per cent)
Husband's occupation (p=0.706)			
Unemployed	77	20.8	79.2
Professional/technical/managerial	692	21.8	78.2
Self-employed (in agriculture)	581	25.5	74.5
Employed (agriculture)	159	23.9	76.1
Skilled manual	283	22.6	77.4
Unskilled manual	457	24.3	75.7
Wife			
Age (p=0.004)			
Less than 20 years	347	23.9	76.1
20-34 years	1 254	21.1	78.9
35 years and over	648	27.9	72.1
Education (p=0.233)			
No education	951	25.2	74.8
Primary	641	23.2	76.8
Secondary	527	20.5	79.5
Higher	130	23.8	76.2
Wife approves family planning (p=0.030)			
Yes	2 129	23.0	77.0
No	120	31.7	68.3
Couple			
Marital duration (p=0.149)			
Less than 5 years	391	22.5	77.5
5-10	473	20.5	79.5
11 and above	1 385	24.8	74.2
Couple education (p=0.048)			
Both uneducated	510	24.9	75.1
Only the husband is educated	441	25.6	74.4
Only the wife is educated	230	16.5	83.5
Both are educated	1 068	23.4	76.6
Couple approval of family planning (p=0.292)			
None approves	104	29.8	70.2
Either of them approves	254	23.6	76.4
Both approve	1 891	23.1	76.9
Discussion of family planning with partner (p=0.049)			
Yes	1 115	21.7	78.3
No	1 134	25.2	74.8
Total	2 249	23.5	76.5

Notes: Rows sum to 100 per cent; p-values are based on chi-square tests.

contraception was found high among husbands who generally approve of family planning. No significant association was observed between the consistency in reporting of contraception and husbands' occupation.

Wives aged 20 to 34 years provided the highest level of consistency in reporting contraceptive use (78.9 per cent), while for the age group 35 years and above it was the lowest (72.1 per cent). Wives' education does not have a significant association with consistent reporting of contraception. If wives approved of family planning their level of consistent reporting of contraception was found to be high.

Consistency in reporting contraceptive use was found to be high particularly among couples who had been married for 5 to 10 years (79.5 per cent). Couple education also had a significant association with the consistent reporting of contraception. When only the wife in a couple is educated, the level of consistency in reporting of contraception was the highest. About 84 per cent of couples in this particular group reported their contraception status consistently. Interestingly, if only the husband in a couple is educated the level of consistency in reporting of contraception was the least consistent (74.4 per cent). This asymmetry indicates the impact of a women-based family planning programme in Bangladesh where women take most of the contraceptive responsibility. Approval of family planning by the spouses shows the highest level of consistency in reporting of contraception (76.9 per cent). Couples who discuss family planning also provide more consistent reporting of contraceptive use (78.3 per cent).

Regression analysis

A two-level random intercept binary logistic regression has been fitted to identify the significant determinants of "consistent reporting of contraception" (yes=1, no=0) (table 3). A significant community effect was found in the analysis indicating that couples from different communities with the same set of characteristics would exhibit a different influence on the response variable. The standard deviation of the random effect was about 0.4. This means, for example, that a one standard deviation change in the community random effect has greater or similar influence on the consistent reporting of contraception by spouses as all the fixed effects in the model. Hence, there is a large amount of unexplained variation in the consistency in reporting of contraception across communities.

Couples from Barisal and Khulna divisions are significantly more likely to provide inconsistent reports of contraception compared with couples from Sylhet division, when controlled for other characteristics. Further analyses changing the reference category for division suggest that

Table 3. Logistic regression estimates of the effects of different socio-economic and demographic characteristics on consistency in reporting of contraception by spouses

Independent variables	*β*	*SE*
Intercept	1.094 ***	0.227
Division *(r: Sylhet)*		
Barisal	– 0.514 **	0.256
Chittagong	0.088	0.231
Dhaka	– 0.004	0.217
Khulna	– 0.447 **	0.224
Rajshahi	0.096	0.227
Area of residence *(r: rural)*		
Urban	– 0.254 **	0.124
Couple education *(r: both educated)*		
Both uneducated	– 0.132	0.138
Only the husband is educated	– 0.135	0.142
Only the wife is educated	0.420 **	0.200
Number of living children *(r: 5+)*		
0	0.495 **	0.224
1-2	0.226	0.146
3-4	0.317 **	0.149
Discussion of family planning with partner *(r: no)*		
Yes	0.203 *	0.106
Random effect variance	0.173 **	0.079

Notes: Level of significance: *p<0.10, ** p<0.05, *** p<0.01; SE denotes standard error.

couples from Rajshahi, Dhaka and Chittagong divisions are more likely to report consistently regarding their contraceptive use compared with those from Barisal and Khulna divisions (results not shown). Couples in urban areas are also significantly less likely to provide consistent reporting of contraception.

The bivariate analyses showed that the education of husbands and wives were not significantly associated with consistency in reporting contraception between spouses. By contrast, couple's education showed significant association with the consistent reporting of contraception. The reason for such phenomenon may be that there exist differential power relations between spouses with different educational attainment which in turn influences the reporting of contraception. This is further supported by the women-oriented nature of the Bangladesh Family Planning Programme and other sociocultural factors. Hence, instead of husband's and wife's individual education, couple's education was considered in the regression analysis. The result suggests that when only the wife is educated, the likelihood of the couple providing

consistent report of contraception is higher than when both the spouses are educated. If the couple has no children or three to four children, their odds of providing consistent reporting of contraception are high compared with couples having five or more children. Couples discussing family planning are also more likely to report consistently on matters relating to contraception.

Discussion and conclusions

Traditionally CPR is measured based on women's direct responses in the surveys (Becker and Costenbader, 2001). A high-level of inconsistency between spouses indicates over- or under-reporting of contraception by one (or both) of the spouse(s) and hence may mislead the policy planners. The present study investigated the level of consistency in reporting of contraception between spouses in Bangladesh and identified the associated determinants of consistency using a nationally representative sample.

Analyses of data suggest that only 76.5 per cent of the couples interviewed provided consistent reports on their contraception. Discrepancies in reporting current use are mostly found for periodic abstinence, the contraceptive pill and condoms. Lack of couple communication may be one of the reasons behind such inconsistency. Also covert use of contraceptive pills by wives may be another reason (Robey and Drennan, 1998). Inconsistent reporting of condom use may be due to the possible under-reporting by wives which was identified by Ahmed, Schellstede and Williamson (1987) among Bangladeshi women as well as among women in Uttar Pradesh, India by Koenig, Simmons and Misra (1984). However, in the changing social structure, the possibility of the use of condom in extramarital relationships can not be ignored (Robey and Drennan, 1998; NIPORT, M.A. and ORCM, 2001).

The regression analysis suggests that couples who are from Sylhet, Rajshahi, Dhaka and Chittagong divisions, those from rural areas, those whose wife only is educated, those having none or three to four children and those which discusses family planning together are more likely to report consistently regarding their contraceptive use compared with their counterparts. Significant community effect was found in the data which may sometimes have greater or similar effect in terms of magnitude (for one standard deviation change) than other factors significantly influencing the consistent reporting of contraception.

The level of inconsistency (23.5 per cent) in reporting contraception in Bangladesh is alarming as many of the government policies depend on CPR. Moreover, the whole process of procurement and distribution of contraceptives is likely to be erroneous. This paper recommends that

DHS should urgently develop a better questionnaire in order to overcome the problem of inconsistency in reporting use of contraception. Also BDHS should continue collecting information on contraception from men to enable similar studies to be undertaken in the future. Programmes should place greater emphasis on effective communication within couples. Mass media communication regarding family planning should also be further strengthened. Programmes should identify the poor performing communities in terms of providing consistent reporting of contraception among couples and develop appropriate responses in order to improve reporting.

Despite the important findings which this paper brings forth, the author wishes to acknowledge one potential limitation of this paper. Although it is a usual practice in developing countries to consider contraception mostly as a tool to regulate fertility within marriage, contraception outside of marital relations, for the purpose of avoiding unintended pregnancy and preventing the transmission of HIV/AIDS and sexually transmitted infections, remain important areas of concern. The findings of the current paper have little policy implications where contraception outside of marital union is considerably high. However, the inconsistency issue can still be thought of within sexual relations between partners of any type (married or unmarried). As for an efficient contraceptive procurement plan, reliable estimates of contraceptive prevalence rates is essential.

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UNITED NATIONS PUBLICATION
Sales No. E.11.II.F.99

Manufactured in Thailand
ISBN: 978-92-1-120634-0
e-ISBN: 978-92-1-055177-9
ISSN 0259-238X
ST/ESCAP/2602

Copies of this publication may be obtained from:

Social Development Division
Economic and Social Commission
for Asia and the Pacific (ESCAP)
United Nations Building
Rajadamnern Nok Avenue
Bangkok 10200, Thailand
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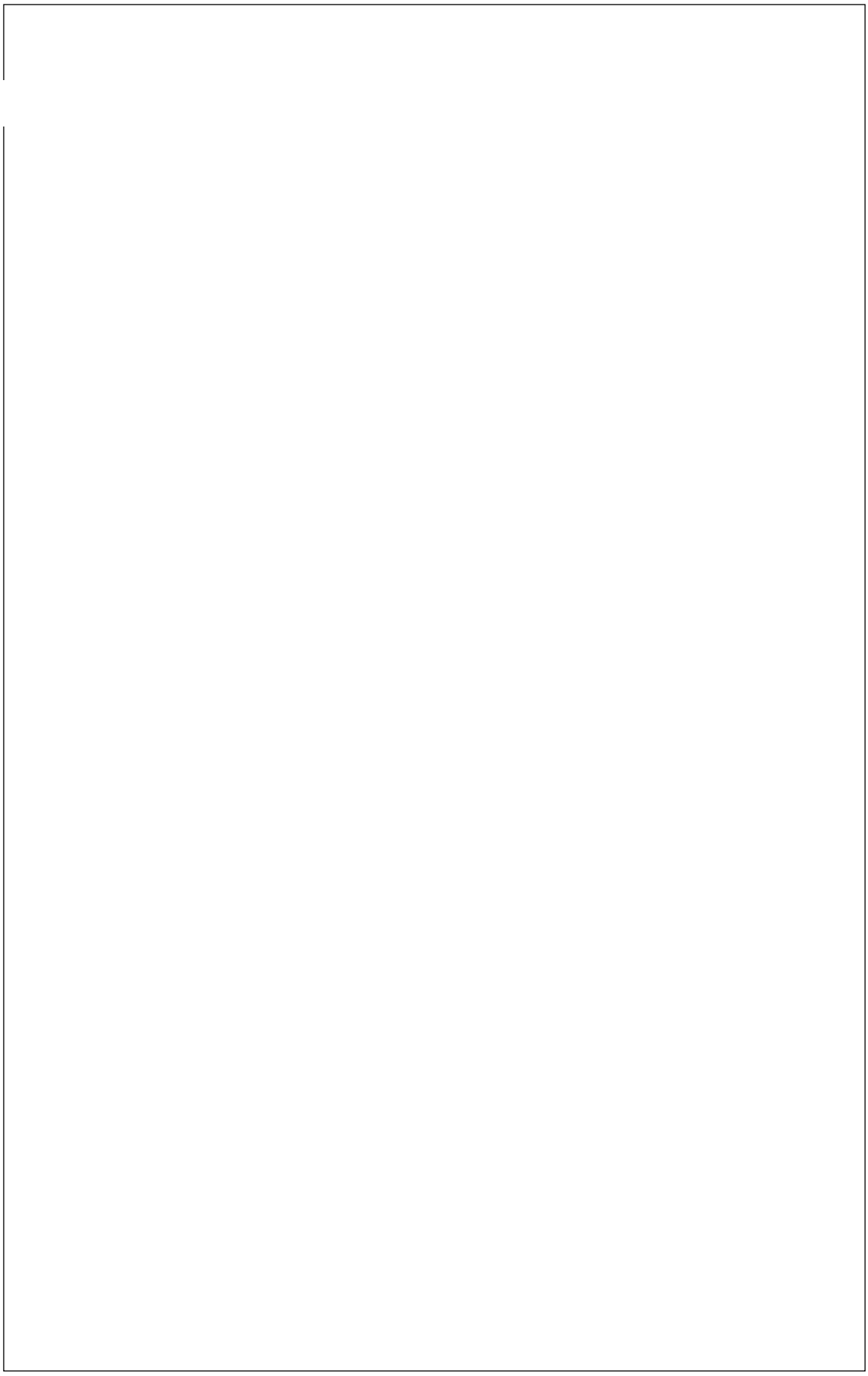

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Published since 1986 by the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP), the *Asia-Pacific Population Journal* (APPJ) brings out high-quality, evidence-based and forward-looking articles on a wide range of population and development issues in Asia and the Pacific.

This issue of the *Asia-Pacific Population Journal* contains the following articles:

USD$15.00
ISBN 978-92-1-120634-0

United Nations publication
Printed in Thailand

March 2011 – 1,800