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Status of Health and Sanitation Security of Rural Households: from Livelihood Point of View

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ABSTRACT

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Clean, accessible water and adequate sanitation for everybody is vital for better livelihood. Despite of sufficient water, many people lose their life from disease related to inadequate water system and poor status of sanitation and hygiene. The study was conducted in two districts of Rohtak division namely Sonipat and Karnal by random selection and by selecting one block from each selected district and two villages from each of the selected block at random. It involved 300 small and marginal farm families living at Sonipat and Karnal district, Haryana, as the sample of the research. Data collection was done by doing interview with a structured questionnaire instrument to assess status of shelter/water and sanitation and health security of farm families. Regarding shelter/water and sanitation security, most of farm families (47.0%) were having piped water at home for drinking and cooking. Only one-third (36.3% and 34.3%) of them had separate kitchen with or without water. They used inverter (42.3%) and solar lantern (40.6%) as source of lighting. About health security, most of households (58.0%) faced frequent illness and 56.3 per cent farm households could afford professional treatment with some difficulty.

Introduction

Rights to water, sanitation and hygiene (hence mentioned as WASH) like other human rights, are universal and therefore birthright of every person. They're also indivisible, interdependent and interrelated rights. Recent academic and policy debates have recognized WASH as a part of a bigger bundle of fundamental rights and commentators who have advocated for a rights-based approach to scrub have often made explicit the connections with other human rights treaties and conventions (Scanlon *et al.*, 2014).

Water Sanitation and Hygiene (WASH) may be a group of interrelated public health issues that are of particular interest to international development programs. Epidemics like outbreak of cholera are often related to bacteriological pollution of water. The number of affected people is often reduced using purification method and good sanitation habit.

This resolution was adopted because inadequate access to toilets can cause open defecation, leading to the spread of fecal contamination throughout the environment. It

may therefore be posited that sanitation is about far more than health. Sanitation has been perceived as basically a health intervention (Cairncross *et al.*, 2013). Some research has suggested that social and cultural factors, like safety and security, comfort, convenience, privacy and prestige, far outweigh health considerations in motivating households to adopt and use toilets (Jenkins, Curtis and Scott, 2017). Importance of sanitation to safeguard human health is documented and undisputed, yet there are 2.6 billion people that haven't any access to "improved sanitation" all over the world, of which 814 million people live in India (WHO and UNICEF, 2012). As results of this, people resort to open defecation and this causes serious damage to the peoples' health and also pollutes the encompassing environment.

The lack of sanitation not only causes millions of deaths through diarrhoeal disease, but is additionally related to environmental degradation and poverty thus weakening the three pillars of sustainability: social, environmental and economic aspect (Kvarnstrom *et al.*, 2017). The ill effects of sanitation are multi-pronged. Poor sanitation facilities not only affect the health of the people but also decelerate the event of the state as an entire.

A person is considered to live in absolute poverty when he/she is unable to satisfy his/her basic needs food, health, water, shelter, education, community participation adequately (Frankenberger and McCaston, 2000). Health security is as important as food. A reduced state of health may be due to tenuous access to health care, poor housing, habitat and is worsened by malnutrition which predisposes individuals to diseases. Habitat security ensures access of households to adequate shelter and related resources to provide healthy and sanitary environment, free from violence/aggression and detrimental

elements to enable safe and secure livelihood (CARE, 2002). Later new indices like purchasing power parity, physical quality of life index, human development index, gender development index are getting used to blend measurement of economic and social progress. These indices are used more for macro level discussion and do little to determine community or household base line data to enhance people's lives. Attempts have been made to measure progress at family and community level called the Household Livelihood Security (HLS) approach. It's community assessment technique that identifies the constraints of people's well-being as well as their assets and opportunities so as to design effective programs to overcome the barriers to raised health, nutrition, housing, education and livelihood security (Drinkwater, 1998). Keeping in sight the problems of shelter/water and sanitation and health security in India, this search was conducted with the target to assess status of shelter/water and sanitation and health security of farm families.

Materials and Methods

The study was conducted in two randomly selected districts of Rohtak division i.e. Sonipat and Karnal. Data were collected in September, 2016- April, 2017. Multi stage sampling technique was employed to select districts, blocks, villages and households. One block (Ganaur block from Sonipat district and Karnal block from Karnal district) from each selected district were selected randomly. Two villages from each block were selected randomly. Seventy five small and marginal farm families were selected randomly from each village making a complete sample of 300. From 300 (150 i.e. 87- small, 63- marginal from Sonipat district and 150 i.e. 116- small, 34- marginal from Karnal district) were selected randomly. Data were collected by household survey on pretested schedule

including extensive detailed information on shelter/water and sanitation and health. Components of livelihood security were grouped into two security viz., shelter/water and sanitation security and health security. Each of those elements was measured for availability, accessibility, quality and status of various indicators on a five point continuum. Further, collected data were quantified and interpreted by using suitable statistical tools like frequency, percentage, weighted mean score and coefficient of correlation.

Results and Discussion

Data regarding shelter/water and sanitation security of selected farm families has been presented in Table 1 showed shelter/water and sanitation security of selected farm families. Results indicate that less than half (47.0%) of the farm families used piped water reception for drinking and cooking followed by community handpump (33.3%) and community tap (17.6%). Only a few households used handpump and canal/well (1.3% and 0.7%). Shyamalie (2008) also reported that 68 per cent of the sample households in Kangra district were having facility of drinking water through common tap which is usually shared by about 5 – 6 households. Whereas, rest of the households were having their own water faucet within the house itself for their domestic purposes. WHO and UNICEF (2013) reported that piped water facility within the rural regions almost doubled in past two decades; there are still 171 million people in rural regions who use surface water because the primary source of water.

Kuberan *et al.*, (2018) conducted a study within the Thandalam village, Chennai, India and reported that majority of the participants (42.0%) used public tap/stand pipe for water procurement and most of them had water supply inside their household premises.

District wise analysis regarding availability of kitchen indicate that 42.0 per cent of farm families of Karnal district had separate kitchen without water and ventilation followed by separate kitchen with water (33.3%). Only 10.7 per cent households had separate kitchen with water and ventilation, while 8.7 per cent had open kitchen and 5.3 per cent were having kitchen within the living room.

In Sonipat district, 39.3 per cent of the farm families had separate kitchen with water, 26.7 per cent had separate kitchen without water and ventilation, 14.6 per cent had open kitchen, 11.3 per cent farm families had kitchen within the area of living room and really few (8.0%) had separate kitchen with water and ventilation.

In case of availability of shelter for livestock, majority (64.0%) of farm families in both the districts had shelter for livestock outside home, followed by 21.7 per cent who had shelter for livestock near the house where they lived, 10.7 per cent of farm families had livestock within their homes. Only a few had far away from home and separate shelter in field (2.3% and 1.3% respectively).

Almost all the farm families had electricity in their house but during the power cut they used other source for lighting. Little less than half (48.7%) of the farm families in Sonipat district used inverter followed by solar lantern (34.6%) and torch (10.7%) whereas in Karnal district 46.7 per cent of the farm families used solar lanterns followed by inverter (36.0%) and kerosene lantern (11.3%) respectively.

With regards to source of cooking fuel, majority of families in both the districts i.e. in Sonipat (79.3%) and in Karnal (88.6%) used dung as a cooking fuel. Just some farm families used wood (9.3%), LPG (6.0%), crop residue (4.0%) and electric stove (1.3%) in

Sonipat, while in Karnal too, few households used LPG (8.0%) and wood (3.3%) as cooking fuel. Chhachhiya (2015) also reported that more than half of the households were having facility of drinking water through tap and majority of the households were still using cow dung cake. Hazarika (2015) during a study to assess the status of sanitation and drinking water in and around Jorhat district of Assam reported that fuel for cooking nearly 45 per cent samples within the slum areas cook on firewood in only 1 or 2 room tenements without adequate ventilation. But the good aspect is that also quite major chunk of the samples use gas as their fuel for cooking.

It was also observed in pooled sample that the majority of the households i.e. 41.3 per cent of households had improved pit toilet followed by pit lavatory (26.7%). Few households had traditional pit (8.0%) and lavatory (3.7%) while about one fifth 20.3 per cent still used open field. Similar data was observed in both the districts.

Barkat(2010) found that only 39 per cent tea garden household members use open place for depiction where quite two-third respondents under this study were used to use open place near to natural water sources or 'Katcha Latrine' (only a uncovered whole with temporary fence). Kaur and Kaur (2013) conducted a study altogether three soil zones of Punjab. Amritsar, Hoshiarpur and Bhatinda district were randomly selected from each soil zone.

Findings of the study revealed that habitat security points to good score of 3.89 for farm size categories and secured equilibrium with index of 2.86 for land less categories. Water availability and accessibility points to a really good index. Other indices for condition of roof, walls and freedom of mobility show satisfactory score for both categories. Poor

indices for number of rooms, floor and kitchen for the landless were the constraints. Kuberan *et al.*, (2018) revealed that one-fourth of the entire participants (25.0%) were devoid of toilets facilities inside their households leaving them with the choices of using community toilets, open defecation or sharing the toilets with other households which successively promotes the rise in incidence of water-borne disease.

Data shown in Table 2 are about health security of families elucidated that in Sonipat district, half (51.3%) of the farm families faced illness once or twice during a week followed by once or twice during a year (21.3%), few times during a month (18.7%) and 8.6 per cent farm families members didn't face any illness.

While in Karnal district too, majority of farm families (64.6%) reported that they suffered illness once or twice during a week followed by once or twice during a year (16.7%), a couple of times during a month (12.6%). 2.7 per cent of households members reported that they faced almost everyday illness. Only 3.3 per cent of farm families never face any illness during last 12 months. Kabir *et al.*, (2016) identified illness as a serious constraint in ability of slum households to possess secured livelihoods in Dhaka (Bangladesh).

Illness had negative effect on human and social capital of households thus pointing to their vulnerable livelihood. There was a requirement to deal with the matter with action required on three fronts; reduce the danger of morbidity because it was significantly related to poverty, stemming from poor habitat and living conditions and poor nutrition. Provision of quality, accessible and affordable health care for adults was required.

Table.1 Shelter/water and sanitation security of farm families

Sr. No.	Variables	Sonipat (n=150)		Karnal (n=150)		Total (n=300)	
		f	(%)	f	(%)	f	(%)
1.	Availability of water for drinking and cooking						
	Piped water at home	61	40.6	80	53.3	141	47.0
	Community tap	30	20.0	23	15.3	53	17.6
	Handpump	4	2.7	0	0.0	4	1.3
	Community handpump	53	35.3	47	31.3	100	33.3
	Canal/well	2	1.3	0	0.0	2	0.7
2.	Availability of kitchen						
	Separate kitchen with water and ventilation	12	8.0	16	10.7	28	9.3
	Separate kitchen with water	59	39.3	50	33.3	109	36.3
	Separate kitchen without water and ventilation	40	26.7	63	42.0	103	34.3
	In the living room	17	11.3	8	5.3	25	8.3
	Open	22	14.6	13	8.7	35	11.7
3.	Availability of shelter for livestock						
	Separate shelter in field	0	0.0	4	2.7	4	1.3
	Far from home	0	0.0	7	4.7	7	2.3
	Near the home	40	26.7	25	16.6	65	21.7
	Outside home	89	59.3	103	68.7	192	64.0
	Within the home	21	14.0	11	7.3	32	10.7
4.	Source of lighting other than electricity						
	Inverter	73	48.7	54	36.0	127	42.3
	Solar lantern	52	34.6	70	46.7	122	40.6
	Torch	16	10.7	9	6.0	25	8.3
	Kerosene lantern	9	6.0	17	11.3	26	8.7
	Candle	0	0.0	0	0.0	0	0.0
5.	Source of cooking fuel						
	LPG	9	6.0	12	8.0	21	7.0
	Electricity stove	2	1.3	0	0.0	2	0.7
	Wood	14	9.3	5	3.3	19	6.3
	Dung	119	79.3	133	88.6	252	84.0
	Crop residue	6	4.0	0	0.0	6	2.0
6.	Access to toilet facilities						
	Flush toilet	11	7.3	0	0.0	11	3.7
	Pit flush toilet	37	24.6	43	28.6	80	26.7
	Improved pit	59	39.3	65	43.3	124	41.3
	Traditional pit	24	16.0	0	0.0	24	8.0
	Open field	19	12.6	42	28.0	61	20.3

Table.2 Health security of farm families

Sr. No.	Variables	Sonipat (n=150)		Karnal (n=150)		Total (n=300)	
		f	%	f	%	f	%
1.	Occurrence of illness in the household during last 12 months						
	Never	13	8.6	5	3.3	18	6.0
	Once or twice in a year	32	21.3	25	16.7	57	19.0
	A few times a month	28	18.7	19	12.6	47	15.6
	Once or twice in a week	77	51.3	97	64.6	174	58.0
	Almost everyday	0	0.0	4	2.7	4	1.3
2.	Availability and accessibility of primary health services						
	0-1 Km	0	0.0	22	14.6	22	7.3
	>1-2 Km	67	44.6	61	40.7	128	42.6
	>2-4 Km	39	26.0	63	42.0	102	34.0
	>4-6 Km	44	29.3	4	2.6	48	16.0
	Beyond 6 Km	0	0.0	0	0.0	0	0.0
3.	Availability and accessibility of government/private hospital						
	0-2 Km	0	0.0	0	0.0	0	0.0
	>2-4 Km	0	0.0	0	0.0	0	0.0
	>4-6 Km	51	34.0	40	26.7	91	30.3
	>6-8 Km	70	46.7	108	72.0	178	59.3
	Beyond 8 Km	29	19.3	2	1.3	31	10.3
4.	Enough medical supply for adequate health care						
	Never	6	4.0	2	1.3	8	2.6
	Rarely	13	8.6	17	11.3	30	10.0
	Sometimes	62	41.3	54	36.0	116	38.6
	Often	69	46.0	77	51.3	146	48.7
	Always	0	0.0	0	0.0	0	0.0
5.	Household ability to afford professional treatment						
	No	0	0.0	0	0.0	0	0.0
	Yes, if money is borrowed	3	2.0	6	4.0	9	3.0
	Yes, with much difficulty	58	38.6	49	32.6	107	35.6
	Yes, with some difficulty	77	51.3	92	61.3	169	56.3
	Yes, household can afford it	12	8.0	3	2.0	15	5.0

Table.3 Relationship between respondents’ personal variables with livelihood securities

Sr. No.	Variables	Food security	Nutrition security	Economic security	Shelter/water & sanitation security	Health security	Education security	Access to institutions
1.	Age	0.557*	0.482*	0.286*	0.389*	0.438*	0.462*	0.021
2.	Family size	-0.281*	0.397*	0.521*	0.526*	0.480*	0.382*	0.165
3.	Family education status	0.725*	0.612*	0.629*	0.713*	0.715*	0.718*	0.692*
4.	Size of house	-0.021	0.186	0.385*	-0.110	0.043	0.125	0.065
5.	Occupation	0.752*	0.638*	0.692*	0.592*	0.583*	0.772*	0.881*
6.	Annual income	0.712*	0.652*	0.702*	0.628*	0.738*	0.752*	0.421*
7.	Size of land	0.689*	0.472*	0.654*	0.115	0.614*	0.196	0.381*
8.	Social participation	0.022	0.026	0.056	0.086	0.021	0.152	0.486*
9.	Information source utilization	0.335*	0.398*	0.401*	0.382*	0.478*	0.328*	0.443*

*Significant at 5% level of significance

Regarding availability and accessibility of primary health services, Table 2 shows that in Sonipat district 44.6 per cent of farm families reported that they had availability of primary health centres within 1-2 Km followed by 4-6 Km (29.3%) and 2-4 Km (26.0%). In karnal district, 42.0 per cent of farm families reported that they have primary health centres within the area of 2-4 Km followed by 1-2 Km (40.7%) and within 1 Km (14.6%). Only 2.6 per cent of farm families had primary health centres at a distance of 4-6 Km from their living area. Shyamalie (2008) also reported that access to health services gained a far better score for women in Kangra district (3.69), compared to women of NuwaraEliya district (1.75). Sakamma (2013) concluded that the households of high women empowered irrigated situation have more availability of primary health services (52.2%) and also are having good accessibility both in terms of time as well as distance.

Further exploration of availability and accessibility of government/private hospital reveals that in Sonipat district, 46.7 per cent respondent reported that availability of

government hospital was within 6-8 Km from their village followed by 4-6 Km (34.0%) and beyond 8 Km (19.3%). Similarly in Karnal district, it had been found that majority of the respondents’ (72.0%) reported that availability of government and private hospital was at 6-8 Km distance from their village. Kaur and Kaur (2013) conducted a study in three soil zones- Amritsar, Hoshiarpur and Bhatinda district of Punjab and reported that health security points to less than satisfactory equilibrium- 2.86 and fragile equilibrium- 2.53 for farm size and landless categories respectively. Access to government hospital was a constraint in all the districts for both the categories and needs to be improved. Hoshiarpur district performed better in all three indices.

Table 2 pinpoints that less than half (48.7%) of the sample households agreed thereon that they often had enough medical supply for adequate health care followed by sometimes (38.6%) and rarely (10.0%) while only 2.6 per cent reported that there wasn’t enough medical supply for adequate health care. Data concerning household ability to afford professional treatment for illness reveals that

in Sonipat district, half (51.3%) of the respondents could afford professional treatment but with some difficulty. 38.6 per cent said they might afford treatment with much difficulty only 8.0 per cent households could afford professional treatment while 2.0 per cent sample households said that they afford professional treatment if money was borrowed. In Karnal district also similar trend was observed where majority (61.3%) of sample households could afford professional treatment with some difficulty, 32.6 per cent with much difficulty and 4.0 per cent of households could afford professional treatment if money was borrowed and really few (2.0%) households could afford professional treatment with no difficulty. Shyamalie and Saini (2008) indicated in their comparative study of Sri Lanka and Hills of India that the position of girls in Sri Lanka was better in terms of livelihood pointers as compared to Kangra district of India. On the size of 1 (very poor) to five (excellent), food security index was 3.06 and 3.33, health security index was 2.8 and 3.17 in hills of India and Sri Lanka respectively. Rani (2013) reported that majority of households said they might afford treatment with some difficulty both for males (48.0%) and females (44.7%).

Relationship between various selected independent variables and therefore the livelihood securities were examined and presented in Table 3. A look at the Table 3 shows that age was significantly and positively correlated with food security ($r = 0.557^*$), nutrition security ($r = 0.482^*$), economic security ($r = 0.286^*$), shelter/water and sanitation security ($r = 0.389^*$), health security ($r = 0.438^*$), education security ($r = 0.462^*$) but no correlation was found with access to institutions. Family size was positively and significantly correlated with nutrition security ($r = 0.397^*$), economic security ($r = 0.521^*$), shelter/water and sanitation security ($r = 0.526^*$), health

security ($r = 0.480^*$), education security ($r = 0.382^*$) but negatively correlated with food security ($r = -0.281^*$).

Family education status was positively correlated with all securities viz. food security ($r = 0.725^*$), nutrition security ($r = 0.612^*$), economic security ($r = 0.629^*$), shelter/water and sanitation security ($r = 0.713^*$), health security ($r = 0.715^*$), education security ($r = 0.718^*$) and access to institutions ($r = 0.692^*$). Size of house was positively and significant correlated with economic security ($r = 0.385^*$).

Occupation of farm families was recorded to be positively and significantly correlated with all securities i.e. food security ($r = 0.752^*$), nutrition security ($r = 0.638^*$), economic security ($r = 0.583^*$), education security ($r = 0.772^*$), access to institutions ($r = 0.881^*$). Annual income of households was also positively and significantly correlated with all securities i.e. food security ($r = 0.712^*$), nutrition security ($r = 0.652^*$), economic security ($r = 0.702^*$), shelter/water and sanitation security ($r = 0.628^*$), health security ($r = 0.738^*$), education security ($r = 0.752^*$), access to institutions ($r = 0.421^*$).

Size of land was found to be correlated with food security ($r = 0.689^*$), nutrition security ($r = 0.472^*$), economic security ($r = 0.654^*$), health security ($r = 0.614^*$), access to institutions ($r = 0.381^*$). Social participation was correlated with access to institutions ($r = 0.486^*$) and non-significant correlation with other securities.

Table 3 further highlights that information source utilization was found to possess positive and significant correlation with all securities i.e. food security ($r = 0.335^*$), nutrition security ($r = 0.398^*$), economic security ($r = 0.401^*$), shelter/water and sanitation security ($r = 0.382^*$), health

security ($r = 0.478^*$), education security ($r = 0.328^*$) and access to institutions ($r = 0.443^*$) at 5 per cent level of significance.

Findings of the study showed that the majority of farm families were having piped water at home for drinking and cooking. Majority of sample households had livestock shelter outside the home, used cow dung cake as source of cooking fuel. Majority of families faced illness once or twice during a week and could afford professional treatment with some difficulty. Regarding association of independent variables with livelihood securities, family education status, occupation, annual income and information source utilization were positively and significantly correlated with all securities.

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