ORIGINAL ARTICLE

Mothers' Health Services Utilization and Health Care Seeking Behavior During Infant Rearing: A Longitudinal Community Based Study, South West Ethiopia.

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ABSTRACT

Background: *data from different studies showed health care behavior and estimated per capita health care expenditure for the general population, but the specific data for infants at different levels of care are lacking. The objectives of this study were to describe mothers' health service utilization during pregnancy and delivery, determine their health seeking behavior and health care expenditures for infants during the first year of life.*

Methods: *The study was longitudinal community based study consisted of a cohort of 8273 live births, their mothers and families between September 1992 and October 1994 in rural and urban settings in Jimma, Illubabor and Kefecho Zones, Southwest Ethiopia. Mothers were interviewed for their health care utilization during pregnancy and delivery. Occurrences of any illness for infants and mothers health care utilization during pregnancy and delivery. Occurrence of any illness for infants and mothers health seeking behavior were collected with the bimonthly visit for a period of 12 months.*

Results: *Mothers' health seeking behavior for ill babies at the various levels of care showed that 46.5, 42.7, 48.2 41.6 percent of diarrhea, cough, fever, and other illnesses, respectively, got treatment in health institutions. More than a quarter of ill infants didn't get any kind of help be it at home, traditional or health institutions. The average health care expenditure in infancy was estimated to be 7.92 birr and it increased with increasing level of education and monthly family income. In all treatment groups about 43 to 58 percent of ill infants claimed to have been cured with highest cure proportion for diarrhea cases after the first treatment was given.*

Conclusion: *improved socioeconomic status of families and at least elementary schooling of mothers would change mothers behavior in seeking care for infants in health institution and increase the power of the family to spend some of their earnings for better care. Improving and providing at least primary health care services in rural areas needs considerations on the side of planners and health care providers.*

Key words: infants, health seeking behavior, expenditure, level of care.

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INTRODUCTION

Diarrhoea and acute respiratory diseases are the major causes of morbidity and mortality among children in developing countries. Each of them is responsible for several million children deaths annually (1). In Ethiopia, the prevailing health problems are communicable diseases and nutritional disorders causing high rates of morbidity and mortality. Because of the limited health infrastructure, access to health services is estimated not to exceed 48.5%. In the existing health facilities, the quality of health services provided is poor. Births attended by trained health personnel are reported as 14% and only 10.2% of pregnant mothers deliver at health institutions. One-year-old children fully immunized were 54.0%, and 31.7% of pregnant mothers were vaccinated for tetanus (TT2). Fewer than one-third of women in developing countries receive antenatal care, for Ethiopia the rate is 30.4% (2-4). In Ethiopia, coverage with antenatal care ranges from around 10% in some rural areas to 60% in urban area (5).

The Welfare Monitoring survey carried out by CSA (1995/96) with a two month recall period, showed that about 19.4% of the study population had been sick (30.0% for infants) out of which 10.2% had obtained medical treatment. The average expenditure per illness episode was Birr 6.02. Birr 10.74 for urban areas and birr 4.77 for rural regions, and that of Jimma was Birr 9.35. The household income and consumption expenditure survey reported the overall monthly per capita health expenditure of Birr 0.65. This estimate varied between rural (Birr 0.58) and urban (Birr 1.03) areas. Analysis of the relationship between per capita health expenditure and per capita income showed a direct link. There was also a direct relationship between level of education and per capita health expenditure (6-9).

A study done in Bas, Zaire, with a recall period of two weeks, diarrhoea occurred in about a fifth of the children, being prevalent among children 7-12 months old. Fever, like diarrhea, is symptom of an underlying infection: reported levels of fever range around 10 % (10).

In infant and <5 children in Ethiopia, mortality remains high. Annual deaths are estimated to be 105/1000 for infants and 172/1000 for under five children (3,11).

In Ethiopia, where the health service coverage is <50%, it is helpful to know mothers' health service utilization and their health-seeking behavior during child rearing. Though data from different studies showed health care behavior and estimated per capita health care expenditure for urban and rural areas for the general population, the specific data during infant rearing and expenditures at different levels of care are lacking. Therefore, in a longitudinal community based study, we are trying to describe mothers' health service utilization during pregnancy and delivery and to determine their health seeking behavior and health care expenditures for infants during the first year of life.

MATERIALS AND METHODS

A longitudinal, community-based study was carried out in urban and rural communities of Jimma, Illubabor and Kefecho zones in Southwest Ethiopia during September 1992 and October 1994. The study population constituted of a one-year live birth cohort, mothers of the index infant (infant caretakers) and their families. These groups of subjects were followed to the age of 1 year, early death of the infant or lost-for-follow up. In this study, variables on socio-demographic status of the mothers and families, health-seeking behavior were included. Data on the occurrence of common infant illnesses and health care expenditures and vaccination

status were also collected. Data collection was made at home starting from birth and every 2 months thereafter by trained females 12 grade completed data collectors. During data collection, supervisors and project staffs made a close supervision. In addition quality of data was routinely checked during data entry. The detailed method was described elsewhere (11,12).

The collected data were entered into computer using SPSS 4.0 programme and analysis was done using SPSS 8.0 for windows statistical package. Because of the skewed distribution of health care expenditures in estimating the average health care expenditure for ill infants by the family, the natural log transformed data was used and averages were back transformed into original units (in birr).

RESULTS

A total of 8161 births, 8050 singletons and 111 multiple births (110 sets of twins and 1 set of triplet) and their mothers were followed to the age of 1 year or early death or lost for follow-up of the infant. The sex ratio at birth was 103 boys per 100 girls. Of the total live births 6631 (80.2%) of them were followed to the age of 1 year, 847 (10.2%) died and the rest 795 (9.6%) were lost-for-follow-up.

Distribution of the study population by residence indicated that 4476 (54.1%) were from rural and the remaining 3797 (45.9%) from urban areas. The socio-demographic data showed that 11.9% and 16.8% of the mothers were below 20 and above 34 years of age with mean age of 26.4 (SD=6.3) years. Most of them (68.9%) were Muslim by religion and from the Oromo ethnic group (67.0%). About 61% of the mothers were illiterate, and 62.6% of the families had a monthly income <100 Birr (Table 1).

Data on mothers' health care utilization during pregnancy and delivery showed that 48.4% did not attend antenatal care, 83.3% delivered at home and 66.0% of the deliveries attended by untrained attendants. The different vaccine antigens expected to be given for infants before the age of 1year were determined. The data showed that 67.4% of infants were vaccinated for BCG, 52.7% DPT3/ polio 3 and only 30.6% for measles. These proportions by residence showed that rural infants received the different antigens at a lower proportion compared with urban infants (Table 2).

Table 1. Characteristics of mothers and households by residential area. Jimma. September 1992 -October 1994.

	Residence				Total	
	Urban		Rural		n	%
	n	%	n	%		
Age group						
< 20	548	14.7	421	9.5	969	11.9
20-24	1104	29.5	1083	24.5	2187	26.8
25-29	1004	26.9	1118	25.3	2122	26.0
30-34	636	17.0	866	19.6	1502	18.4
> 34	445	11.9	926	21.0	1371	16.8
Total	3737	100.0	4414	100.0	8151	100.0
Ethnicity						
Oromo	1486	39.8	3971	90.0	5457	67.0
Amara	603	16.1	59	1.3	662	8.1
Keffa	484	13.0	123	2.8	607	7.5
Gurage	402	10.8	18	.4	420	5.2
Daworo	359	9.6	147	3.3	506	6.2
Yem	226	6.0	66	1.5	292	3.6
Tigre	98	2.6	15	.3	113	1.4
Others	78	2.1	12	.3	90	1.1
Total	3736	100.0	4411	100.0	8147	100.0
Religion						
Christian	2194	58.7	336	7.6	2530	31.1
Muslim	1542	41.3	4075	92.4	5617	68.9
Total	3736	100.0	4411	100.0	8147	100.0
Education						
Illiterate	1277	34.2	3679	83.4	4956	60.9
Elementary	1191	31.9	644	14.6	1835	22.5
Junior & above	1262	33.8	90	2.0	1352	16.6
Total	3735	100.0	4414	100.0	8149	100.0
Monthly family income						
< 100	1182	34.9	3610	84.6	4792	62.6
100-199	838	24.8	514	12.0	1352	17.7
200-299	429	12.7	103	2.4	532	7.0
300+	935	27.6	41	1.0	976	12.8
Total	3384	100.0	4268	100.0	7652	100.0

Table 2. Mothers health care utilization during pregnancy and delivery and EPI status of infants by mothers residence. Jimma. September 1992 -October 1994.

	Residence				Total	
	Urban		Rural		n	%
	n	%	n	%		
Frequency of ANC visits						
None	1086	29.0	2868	64.9	3954	48.4
1-3	1395	37.3	1263	28.6	2658	32.6
4-6	885	23.6	265	6.0	1150	14.1
> 6	377	10.1	22	.5	399	4.9
Total	3743	100	4418	100	8161	100
Delivery attendant						
Health personnel	1491	39.8	108	2.4	1599	19.6
TTBA	755	20.2	424	9.6	1179	14.4
TBA	297	7.9	202	4.6	499	6.1
Relatives	602	16.1	2130	48.2	2732	33.5
Others	598	16.0	1554	35.2	2152	26.4
Total	3743	100	4418	100	8161	100
Place of delivery						
Health Institution	1278	34.1	86	1.9	1364	16.7
Home	2465	65.9	4332	98.1	6797	83.3
Total	3743	100	4418	100	8161	100
BCG	3290	87.3	2242	50.6	5532	67.4
Polio 0	1563	41.5	252	5.7	1814	22.1
Polio 3	2602	75.7	1388	33.5	3990	52.7
DPT 3	2602	75.7	1389	33.6	3991	52.7
Measles	1796	57.7	351	9.0	2147	30.6
Total①	3111		3902		7013	
Drop-out rate		35.7		83.7		57.3

① *Infants survived at least to the age of nine months*

$$\text{Drop-out rate} = \frac{\text{BCG - Measles}}{\text{BCG}} \times 100$$, *for infants who survived to the age of at least 9 months*

The perception of the mother/caretaker to any of the illnesses–diarrhea. cough. fever and other illnesses such as accidents in the bimonthly visit was used as the starting point for question on mothers health seeking behavior when their infant get sick. Accordingly. in the one year follow-up period with 2 months recall period. 4.686 (56.6%). 2581 (31.2%). 2302 (27.8%). and 2419 (29.3%) of the infants had at least one occurrence of diarrhea. cough. fever or other types of illness. respectively. With the two months recall period. the prevalence rates of the different illnesses by age of the infant is presented in figure 1.

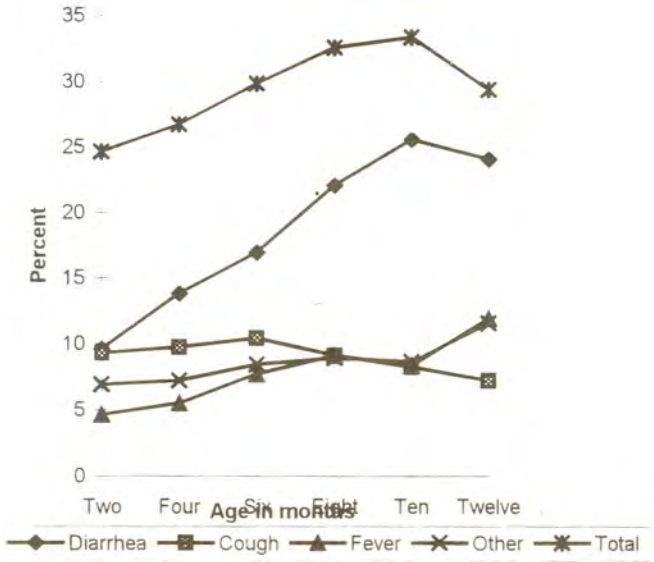

Fig.1 Prevalence of Illnesses by age of infant and type of illness

Mothers' health seeking behavior in relation to the above illnesses and the place where treatment was given was determined. With the classification of place of help as health institution. home (self treatment). traditional. and no help. the data showed that 45.0. 24.0. 4.3. and 26.7% of mothers seek help for their infants in health institutions. home. traditional and did nothing. respectively. With respect to the different illnesses 46.5. 26.7. 4.5. and 22.5% of diarrhea cases got treatment in health institutions. home. traditional and no treatment given. respectively. Muslims. rural residents. illiterate mothers and low-income families (<100 Birr per month) got treatment for their infants at a lower proportion from health institutions compared with the other groups. In addition. these groups of mothers had a higher tendency not to get any kind of help for their infants (Table 3).

Table 3. Type of aliments by place of treatment and mothers and family characteristics. Jimma. September 1992 -October 1994.

	Diarrhea				Cough			
	Home ②	TRD✱ ③	HI☆	None※	Home ②	TRD✱ ③	HI☆	None※
Religion								
Christian	214(16.8)	68(5.4)	817(64.3)	172(13.5)	106(15.9)	5(0.7)	445(66.7)	111(16.6)
Muslim	1034(30.4)	135(4.0)	1356(39.8)	881(25.9)	484(25.3)	25(1.3)	656(34.3)	746(39.0)
Total	1248(26.7)	203(4.3)	2173(46.5)	1053(22.5)	590(22.9)	30(1.2)	1101(42.7)	857(33.2)
Residence								
Urban	298(15.0)	97(4.9)	1325(66.8)	264(13.3)	153(14.9)	8(0.8)	739(71.9)	128(12.5)
Rural	950(35.2)	106(3.9)	854(31.6)	792(29.3)	437(28.1)	22(1.4)	363(23.4)	731(47.1)
Total	1248(26.6)	203(4.3)	2179(46.5)	1056(22.5)	590(22.9)	30(1.2)	1102(42.7)	859(33.3)
Education								
Illiterat.	956(32.0)	127(4.3)	1077(36.1)	827(27.7)	434(26.0)	21(1.3)	516(30.9)	701(41.9)
1-6	210(20.1)	40(3.8)	618(59.0)	179(17.1)	99(17.8)	4(0.7)	326(58.6)	127(22.8)
7-	82(12.8)	35(5.5)	476(74.4)	47(7.3)	57(16.3)	5(1.4)	258(73.9)	29(8.3)
Total	1248(26.7)	202(4.3)	2171(46.4)	1053(22.5)	590(22.9)	30(1.2)	1100(42.7)	857(33.3)
Income								
100	897 (31.8)	129(4.6)	997(35.3)	799(28.3)	410(25.8)	20(1.3)	487(30.6)	672(42.3)
100-199	178(23.5)	28(3.7)	438(57.9)	112(14.8)	89(20.7)	5(1.2)	240(55.9)	95(22.1)
200-299	53(18.8)	12(4.3)	183(64.9)	34(12.1)	31(20.7)	3(2.0)	97(64.7)	19(12.7)
300-	44(9.5)	10(2.2)	374(80.6)	36(7.8)	34(15.2)	1(0.4)	171(76.7)	17(7.6)
Total	1172(27.1)	179(4.1)	1992(46.1)	981(22.7)	564(23.6)	29(1.2)	995(41.6)	803(33.6)
	Fever				Other illnesses			
Religion								
Christian	86(13.8)	32(5.1)	413(66.2)	93(14.9)	158(23.7)	75(11.3)	333(50.0)	100(15.0)
Muslim	372(22.2)	42(2.5)	695(41.5)	564(33.7)	414(23.6)	132(7.5)	672(38.4)	534(30.5)
Total	458(19.9)	74(3.2)	1108(48.2)	657(28.6)	572(23.7)	207(8.6)	1005(41.6)	634(26.2)
Residence								
Urban	140(13.9)	35(3.5)	697(69.4)	133(13.2)	186(19.5)	109(11.4	549(57.5)	110(11.5)
Rural	318(24.5)	39(3.0)	414(31.9)	526(40.6)	386(26.3)	98(6.7)	456(31.1)	525(35.8)
Total	458(19.9)	74(3.2)	1111(48.3)	659(28.6)	572(23.6)	207(8.6)	1005(41.5)	635(26.3)
Education								
Illiterate	318(22.3)	41(2.9)	541(38.0)	534(36.8)	388(24.6)	138(8.8)	553(35.1)	497(31.5)
1-6	93(17.2)	24(4.4)	316(58.5)	107(19.8)	136(26.0)	39(7.4)	241(46.0)	108(20.6)
7-	47(14.1)	9(2.7)	249(74.8)	28(8.4)	48(15.1)	30(9.5)	210(66.2)	29(9.1)
Total	458(19.9)	74(3.2)	1106(48.1)	659(28.7)	572(23.7)	207(8.6)	1004(41.5)	634(26.2)
Income								
100	307(23.4)	41(3.1)	482(36.7)	484(36.8)	362(24.8)	111(7.6)	519(35.6)	466(32.)
100-199	71(17.2)	16(3.9)	229(55.6)	96(23.3)	86(22.2)	49(12.6)	170(43.8)	83(21.4)
200-299	24(15.9)	5(3.3)	107(70.9)	15(9.9)	28(18.1)	13(8.4)	97(62.6)	17(11.0)
300-	32(11.9)	4(1.5)	211(78.7)	21(7.8)	41(19.2)	14(6.6)	143(67.1)	15(7.0)
Total	434(20.2)	66(3.1)	1029(48.0)	616(28.7)	517(23.4)	187(8.4)	929(42.0)	581(26.2)

✱*Traditional,* ☆ *Health Institution,* ※ *No help given*

② *All types of help given to the infant at home level include home made remedies, herbs, modern medicine, etc.*

③ *Traditional medicines include holly water (tsebel), 'Wogesha', traditional healers, etc.*

Numbers in brackets indicate percent

Of the total 6401 infants who had at least one occurrence of the above illnesses. in 3037 (47.4%) of the cases the families incurred some amount of money to get treatment for their infants and the remaining got help freely or no help given. When the analysis is done only for these 3037 cases. the natural log transformed average cost was 2.07 (SD=1.17) birr that is approximately 7.92 birr (this was before the devaluation of birr) per child per year. As has been the usual case. the mean health care expenditure increased as the number of illnesses that infants contracted at a time. Accordingly. the mean expenditure increased from 5.99 for one illness to 12.18 birr for the four illnesses considered. For those families who reported their family income who had ill baby. total household spending on infant health amounted to 43.594.80 birr/year from their total yearly earnings of 5.455.277 Birr. i.e.. 0.8% of their income (0.7 and 1.3 % for urban and rural areas). The average estimated health care expenditure for sick infants for only one aliment was 2.36. 3.46. 3.13. and 3.29 birr for diarrhea. cough. fever and other illnesses. respectively. With respect to its distribution by place of treatment. expenditure for diarrhea was 3.16. 1.59. and 2.03 birr at health institution. home. traditional level. respectively. The corresponding expenditure for cough was 3.82. 1.67. and 4.62 birr. for fever 3.82. 1.39. and 2.14 birr and for other illnesses 4.66. 1.75. and 2.77 birr at health institutions. home. and traditional level. respectively. The data revealed that family average health care expenditure increased from home to health institution and with increasing family income and maternal education. In addition infants of urban resident mothers incurred more costs compared with rural infants (Table 4).

Table 4. Yearly average health care expenditure (in birr) by type of illness and place of treatment, mothers' education, family income and place of residence.

	Diarrhea④		Cough④		Fever④		Other illness④		Total⑤	
	Mean	n	Mean	n	Mean	n	Mean	n	Mean	n
Place of treatment										
Health Institution	3.16	695	3.82	178	3.82	155	4.66	195	3.58	1223
Home	1.59	319	1.67	25	1.39	31	1.75	88	1.61	463
Traditional	2.03	62	4.62	7	2.14	14	2.77	72	2.50	155
Total	2.36	1076	3.46	210	3.13	200	3.29	355	2.98	1841
Education										
Illiterate	2.10	593	2.59	99	2.41	88	3.00	203	7.83	1617
1-6	2.59	269	4.35	51	3.13	59	2.94	79	8.67	771
7-	3.35	211	4.62	59	4.81	52	4.76	73	9.58	641
Total	2.44	1073	3.46	209	3.13	199	3.29	355	7.92	3029
Family income										
< 100	1.93	564	2.51	92	2.32	99	3.16	183	6.62	1492
100-199	2.48	188	2.89	32	3.03	33	2.89	53	8.50	550
200-299	2.92	66	4.90	24	6.05	13	4.14	31	9.87	271
≥ 300	4.66	151	6.17	39	5.58	41	4.57	53	11.02	476
Total	2.39	969	3.89	187	3.16	186	3.39	320	7.92	2789
Residence										
Urban	3.22	565	3.97	146	4.22	125	3.56	197	8.85	1733
Rural	1.79	511	2.53	64	1.90	75	3.00	158	6.89	1304
Total	2.44	1076	3.46	210	3.13	200	3.29	355	7.92	3037

④*These are infants who had only one of the illnesses and got any kind of paid treatment*
⑤*All ill infants who got treatment incurring some amount of money except for the place of treatment groups.*

DISCUSSION

In areas where high disease burden of children is associated with high mortality, knowledge on caretakers and family behavior on health care is vital and will be more important when the condition is for infants at a higher risk of morbidity and mortality in developing areas. Ethiopian infants are not different from this truth.

Our study findings in relation to maternal health service utilization during pregnancy –antenatal care attendance and delivery was relatively higher compared with the national figure and other finding (3,5). The difference in health services utilization between urban and rural mothers might be attributable to the fact that urban mothers have more access to the different health services and better educational levels.

Respondents generally give symptoms that do not themselves diagnose a particular disease. Nevertheless, since it is the perception of illness by a respondent that will determine his or her use or otherwise of any forms of health care, symptoms described during interview surveys become of greater importance to epidemiologists. They reflect the behavioral pattern of sick people in relation to health care services indicating what constitutes illness to them and their choice of treatment (13).

As the health of children is strongly dependent on maternal health care behavior, it follows that maternal perception of illness is an important consideration (10). The findings of our study based on the two months recall period indicates that more than three quarter of infants had at least one episode of illness in their first year of life from which diarrhea constituted the highest proportion. Mothers' first action to seek help for infants vary from did nothing to health institution levels. Accordingly, most mothers (42-48%) preferred health institutions for seeking help for their babies. This proportion is higher for urban mothers compared with their rural counter parts that might be due to better access to health services, better education and income. On the other hand, there seems a tendency of a wait-and-see attitude of mothers for not seeking any kind of help. In this regard about 23 to 33 % of the infants got no help for the different illnesses which might be attributable to mothers perception to the severity of conditions, this proportion was higher from reports of other studies for the general population (15). The low proportion of no help given for infants with diarrhea that has immediate detectable dehydration sign by mothers reflects this fact.

The data showed those Muslims, illiterate mothers, families with low monthly income (below 100 birr per month) and rural residents tend to use health institutions at a lower proportion. These group of mothers also got treatment at a lower proportion than Christians, mothers who had at least elementary schooling, monthly family income >100 birr and urban residents. These findings are also supported by other studies (14, 15).

We found the average health care expenditure of families to be 7.92 birr per child. The health care expenditure of families increased linearly by educational status and family income and varied according to place of treatment, lower for home and higher for health institutions, and place of residence, higher for urban. The CSA survey found an overall average expenditure per illness episode for the last two months reported of birr 6.02, birr 10.74 for urban areas and birr 4.77 for rural regions. Other studies showed higher mean treatment costs for modern care. On the other hand, the overall monthly per capita health expenditure is birr 0.65 (0.58 for rural and 1.03 for urban areas) (5-7). In our study, with respect to costs of the

different aliments the average cost ranking (highest to lowest) were cough. other illnesses. fever and diarrhea.

Of all ill infants. mothers claimed that about 50.0% of them be cured. For those infants who got any kind of help. 69.0 to 82.5% got cured after the first treatment was given. These results are higher than other studies that included all population groups (15).

From the findings of our study we. might conclude that infants contracted a high rate of morbidity mostly of diarrhea. cough and fever. Mothers' health seeking behavior though better than the general population. there was no disease category that can only be treated at health institutions or home or traditional level alone. One important point that we need to give attention is that higher proportion of infants who didn't get any type of treatment. This is of serious concern because it might indicate that mothers or caregivers perception of the seriousness of illnesses in infants.

Improved socioeconomic status of the families and at least elementary schooling of mothers would change mothers behavior in seeking treatment for infants in health institution. and increase the power of the family to spend some of their earnings for better treatment. Accessibility of health care services for rural mothers seemed to affect for lesser utilization rate of health services. Therefore. improving and providing at least primary health care services in rural areas needs considerations on the side of planners and health care providers.

In view of the low health service coverage. health care providers need to understand the prevailing health seeking behaviors of mothers at the different levels of care. This study has attempted to depict mother health seeking behavior at various levels when their infants get sick. This would help to develop health care to our setting on self-reliance by involving the community and the different relevant sectors.

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