

**EXPLORING WATER AND SANITATION PRACTICES IN YANADI TRIBE FAMILIES WITH CHILDREN AGED BELOW FIVE YEARS, CHITTOOR, AP**

**Dr. P. Akthar,**

**Dr. K.N.L. Durga Bhavani**

**Mrs. S. Sujatha**

<sup>1</sup>Senior Asst. Professor,

<sup>2</sup> & <sup>3</sup>Asst. Professor,

School of Commerce & Management, Mohan Babu University, Tirupati.

**ABSTRACT**

**Background:** Poor household water, sanitation, and hygiene (WaSH) practices are linked to higher mortality. Studying the wash practices for young children in Yanadi Tribe households of, Chittoor district, Andhra Pradesh, India.

**Methodology:** A community-based cross-sectional study was conducted in four mandals in 2023. A total of 100 households with children under the age of five were located. Data were gathered from mothers and other caregivers. From four distinct indices—water, sanitation, hygiene, and hand washing practices—a summary WaSH score was produced, and factors were discovered.

**Findings:** 69% of all families reported not taking any steps to ensure that their water was safe to drink. More than 90% of the households said they kept water in a container with a lid on it and got water by dipping a glass into the containers. The prevalence of open defecation was high (85%) Three-fifths of the households in the study claimed to wash their hands with water and soap to remove dirt, and one-third (37%) claimed to wash their hands with water and soap to remove excrement. 15 was the median WaSH score. WaSH score was only substantially correlated with socioeconomic characteristics in the hierarchical stepwise multiple linear regression.

**Conclusion:** The majority of the Yanadi tribe in Andhra Pradesh, India, practised inadequate WASH practices.

**Keywords:** Child mortality, Water, sanitation, and hygiene (WASH), Under-five Children, defecation

**1. Introduction**

Indian tribal populations are the original inhabitants of the country. Adivasi, vanyajati, vanvasi, pahari, adimjati, and anusuchit jan jati are terms frequently used to describe tribal people; the latter being the term. Tribal groups, as is also true for used in the constitution. Similar to other population groupings, tribal communities are at various stages of social, economic, and educational development. At the other end of the scale, tribes are characterised by a pre-agriculture level of technology, a stable or declining population, extremely low literacy, and a subsistence level of economy. The Yanadi Tribe of Andhra Pradesh represents one, despite the fact that some tribal communities have assimilated and accepted a mainstream way of life. One such tribe whose members were formerly nomads but have now established some sort of permanent settlement is the Yanadi Tribe of Andhra Pradesh. In Andhra Pradesh, Yanadis are numerically the largest Scheduled Tribe (ST) constituting 41 percent of the state's ST population.

Many Indian tribes who lived in the remote hilly forest areas stayed backward, especially in terms of health, education, and socioeconomic conditions because they were largely unaffected by the development processes taking place in the rest of the state. But over time, a lot of these tribes have become more incorporated into the rest of civilization. Another set of difficulties are brought on by this integration process. This blending of ancient and modern beliefs could lead to some acculturation, resulting in modifications to practises and customs.

Children would be particularly impacted by these changes because they are a vulnerable group and because many of the beliefs which undergo a change are related to childbirth and child rearing.

The most crucial period for overall development throughout the course of a lifetime is early infancy. According to NFHS III estimates, the newborn mortality rate and under-five child death rate for STs in Andhra Pradesh were 94 and 112, respectively. More over half of these infant fatalities were caused by ailments that could have been avoided or managed with access to straightforward, reasonably priced therapies. Pneumonia, diarrhoea, and malnutrition are the three leading causes of death in children under the age of five worldwide. Malnutrition is a factor in about one-third of all child fatalities.

Safe drinking water, adequate sanitation, cleanliness, immunisation, good newborn feeding, and supportive settings can all help avert a major share of mortality. Therefore, early childhood interventions can significantly contribute to the reduction of childhood illness and mortality.

There is numerous research on India's water, sanitation, and hygiene (WaSH) practices [9–11], however, there are only few studies focusing on the tribal community. The objective of the present research was to investigate and pinpoint the factors that influence households of the Yanadi tribe in the Chittoor region of Andhra Pradesh, India, that practice water, sanitation, and hygiene for children under the age of five.

## 2. Research Methodology

Research Objectives:

1. to study the water, sanitation, and hygiene practices for under-five children among households of the Yanadi Tribe in Chittoor district, Andhra Pradesh, India.
2. To identify WaSH practices' determinants among households of the Yanadi Tribe in Chittoor district, Andhra Pradesh, India.
3. To suggest sustainable Hygiene Practices to reduce mortality rate among under-five children.

This cross-sectional community-based study was carried out in 2013 in the Andhra Pradesh district of Chittoor's Madanapalle revenue division. We chose mandals (administrative entities in a district) with a high proportion of Yanadi population. The Yanadis' urban centres, which are all typically at one end of the hamlet, were also taken into account. Most urban enclaves were predominantly of a single ethnicity. The sample size needed was determined using the point prevalence of acute respiratory infection (ARI) among children under the age of five to be 12 [12], with an alpha error of 0.05 and a relative precision of 25%.; the required sample size would be 100. As we wanted to study water, sanitation, and hygiene practices with respect to under-five children, households with at least one under-five child were included in the study. The youngest under-five child was studied if more than one was present.

Each of the chosen thandas underwent a house-to-house survey. The mother's information was gathered using a semi structured, pretested interview schedule. Information was sometimes gathered from the caregiver (when the mother wasn't available or when the child was an orphan). Before the study began, the questionnaire underwent a pretest. There were 27 open-ended questions to investigate the demographics of the patients and the water, sanitation, and hygiene practises for the research population's under-fives. To ensure the accuracy of the translation, it was first translated into the native language and then back into English. Each interview lasted between 30 and 40 minutes.

The Chittoor district administration was contacted for the necessary approvals before the study could be carried out. SPSS version 17.0 (Chicago, IL, USA) was used to analyse the data, which were entered into a Microsoft Excel spreadsheet. In Table 1, a summary WaSH score is displayed. Wherever applicable, proportions and mean (SD) were calculated. P value of <0.05 was considered significant. The hierarchical stepwise multiple linear regression analysis was utilized to identify key demographic, socioeconomic, and housing determinants of WaSH score.

**Table 1:** Indicators of water, sanitation, and hygiene practices that were used to develop summary WaSH score.

<b>Drinking water score**</b>	<b>Sanitation score**</b>	<b>Hygiene score**</b>	<b>Hand wash score**</b>
<b>Water supply</b>	<b>Defecation practice</b>	<b>Child body hygiene</b>	When hands are dirty* After defecation* Before preparing food* Before eating food* After eating food* After cleaning children*
Piped water supplied to the house Distance of water supply less than 100 meters	Use of sanitary latrine in the house by household members Use of sanitary latrine in the house by children	Daily bathing Daily changing of clothes Daily brushing of teeth	
Water storage	Waste disposal	Food hygiene	
Daily cleaning of vessels Covering utensils with a lid Treating water to make it safe	Waste pit away from the house or collected by municipal person	Washing before eating fruits and vegetables Do not eat raw vegetables	
Water retrieval			
Tap connected to vessel/tank or drawn by ladle/vessel with a handle			
Possible score 0–6	Possible score 0–3	Possible score 0–5	Possible score 0–12

\*Score of various hand washing methods: wash with water and soap = 2, wash with only water = 1, and do not wash = 0.

\*\*WaSH score. It includes 4 broad indices: drinking water score, sanitation score, hygiene score, and hand washing score. A summary WaSH score was generated from the sum of the four specific indices and had a total of 26 points possible.

<b>Table 2:</b> Demographic and socioeconomic characteristics of the study population (n = 100).		
<b>Variable</b>	<b>Category</b>	<b>Total n (%)</b>
<b>Child characteristics</b>		
Age of the child in months	0–11	25(25)
	12–35	45 (45)
	48–59	30 (30)
Gender of the child	Girls	48 (48)
	Boys	52 (52)
Birth order	1	69(69)
	>1	31 (31)
<b>Socioeconomic characteristics</b>		
Mother's education	≥ primary school	48(48)
	< primary school	52 (52)
Father's education	≥ primary school	56 (56)
	< primary school	44 (44)
Mother's occupation	Nonlaborer	44 (44)
	Laborer and not working	56 (56)
Fathers' occupation	Nonlaborer	30(30)
	Laborer and not working	70(70)
<b>Household characteristics</b>		
Type of house	Pucca	91 (91)
	Semipucca/kutcha	9 (9)
Presence of overcrowding*	Present	65(65)
	Absent	35 (35)
Below poverty line status**		39(39)
*Overcrowding is defined using the number of persons per room criteria. **BPL criteria used annual family income up to Rs 60,000.		

### 3. Results

A total of 100 children were studied. The demographic and socioeconomic characteristics of the study population are shown in Table 2. Majority of the households (69%) reported doing nothing at home to make the water safe for drinking. Over 94% of the households reported storing water in a utensil covered with a lid. Nearly three-quarters (74%) of the households reported cleaning the utensils at least once a day. Nearly 90% of the households reported retrieving water by dipping glass in the vessels, which were generally cleaned daily and covered (Table 3). Open defecation was commonly reported (85%) among the study population and mainly open drains and the street were the places of defecation for their children. Latrine use was only 4.0% among the households. Around 49.9% of mothers reported leaving stools of their under-three children uncovered (Table 3).

**Table 3:** Reported water (W), sanitation (S), and hygiene (H) practices among household members (n = 100).

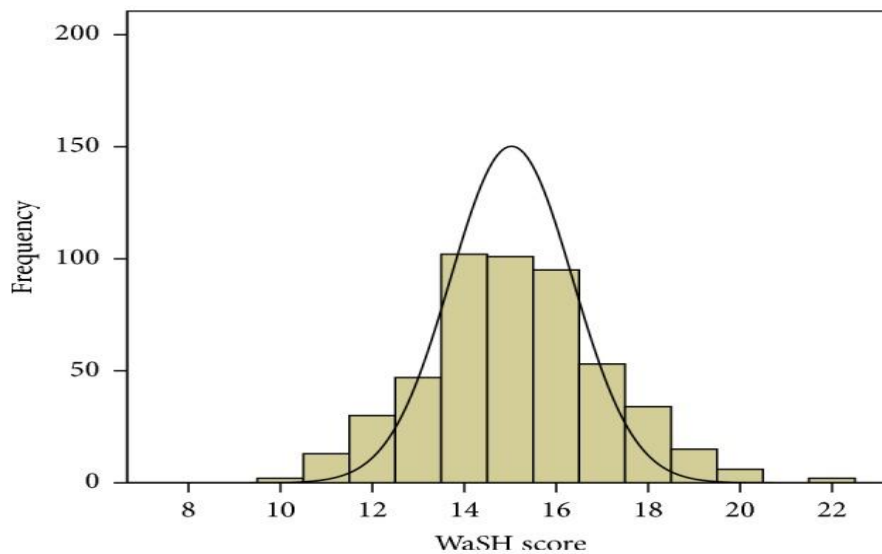
<b>Drinking water (N (%))</b>	<b>Sanitation (N (%))</b>	<b>Hygiene (N (%))</b>	<b>Hand washing</b>		
<b>Water supply</b>	<b>Defecation practice</b>	<b>Child body hygiene</b>	<b>Occasion</b>	<b>With soap and water (N (%))</b>	<b>Only water (N (%))</b>
			When hands are dirty	59 (59)	37(37)
Presence of piped water in the house (2(2.0))	Use of sanitary latrine in the house for defecation by household members (15 (15))	Daily bathing (89 (89))	After defecation	37 (37)	53(53)
Distance of water supply less than 100 meters (92 (92))	Use of sanitary latrine in the house for defecation by children (13 (13.0))	Daily changing of clothes (89(89))	Before preparing food	9 (9)	83(83)
Water storage	Waste disposal	Daily brushing of teeth (71(71))	Before eating food	8(8)	92 (92.0)
Frequency of cleaning of vessels daily (74 (74))	Waste pit away from the house/collected by municipal person (83 (83))	Food hygiene	After eating food	1 (1.0)	99 (99)
Covering utensils with lid (94 (94))		Washing before eating fruits and vegetables (44(44))	After cleaning children	33(33)	57(57)
Do some procedures for making water safe (31 (31.0))		Do not eat raw vegetables (19(19.0))			
Water retrieval					
Tap connected to vessel/tank & drawn by vessel with a handle					

**Table 3:** Reported water (W), sanitation (S), and hygiene (H) practices among household members (n = 100).

Drinking water (N (%))	Sanitation (N (%))	Hygiene (N (%))	Hand washing		
Water supply	Defecation practice	Child body hygiene	Occasion	With soap and water (N (%))	Only water (N (%))
(9(9.0))					

Less than two-thirds (59%) of the study households reported using water and soap for cleaning dirty hands. Merely one-third (37%) of the household members of the study participants reported using water and soap after defecation. Over 90% of the household members of the study participants reported cleaning their hands with water only before and after meals. Soap was used when hands were thought to be dirty. The hand wash score was more than 9 in 29% of the study participants.

Nearly 90% of children reported bathing and changing clothes daily. In fact, about half of them reported doing this twice a day. Around 57% of the mothers reported cutting nails every 10 days. Most of the children were reported to brush their teeth at least once a day, usually with a toothbrush and paste. About 91% of children had the habit of eating raw vegetables and nearly 44% of them used to wash them with water before eating (Table 3).



**Figure 1: Distribution of households with respect to WaSH score.**

The first quartile of WaSH score was 14, and the third quartile was 16. The median WaSH score was 15 (Figure 1). In the hierarchical stepwise multiple linear regression analysis, child demographic factors (Block 1, Table 4) explained 0.3% of the variance (adjusted R2 = 0.003) in total WaSH score when none of the other factors were controlled for. Socioeconomic variables (Block 2, Table 4) explained an additional nearly 14.5%. Altogether, the final model explained 14.3% of the variance in WaSH score. Mother's occupation and father's education and occupation were significantly associated with WaSH score in the hierarchical stepwise multiple linear regression analysis (Table 4).

<b>Table 4:</b> Results of hierarchical stepwise multiple linear regression analyses.							
Analysis block	Adjusted R-square	Independent Variable	B	95% CI of B		$\beta$	P value
				Lower bound	Upper bound		
Dependent variable = WaSH score							
<b>Block 1</b>							
Demographic factors	0.003	Child gender	-0.091	-0.416	0.234	-0.023	0.583
		Child age	-0.154	-0.394	0.085	-0.058	0.206
		Child birth order	-0.212	-0.935	0.511	-0.050	0.565
<b>Block 2</b>							
Socioeconomic factors	0.145	Mother's education	-0.209	-0.575	0.156	-0.054	0.261
		Mother's occupation	-0.679	-1.063	-0.295	-0.172	0.001
		Father's education	-0.426	-0.793	-0.058	-0.102	0.023
		Father's occupation	-0.803	-1.212	-0.395	-0.188	0.000
		BPL family	0.195	-0.153	0.544	0.049	0.270
<b>Block 3</b>							
Housing factors	0.143	Pucca house	-0.214	-0.769	0.342	-0.032	0.450
		No Overcrowding	-0.070	-0.760	0.621	-0.017	0.843
B is the unstandardized regression coefficient.							

#### 4. Discussion

Clean water, basic toilets, and proper hygiene practices are the most crucial factors in limiting the spread of illnesses among children. In the present study, the major source of drinking water among the study population was public taps. Even though almost three-fourths of the study households cleaned their water storage containers every day, the majority of them did nothing to ensure that the water was safe to consume. Moreover, more than 90% of the households practiced retrieval of water using a glass without a ladle. Without the basic water storage and retrieval practices, the lives of children of Yanadi Tribes are at risk of water and sanitation related diseases leading to mortality.



The majority (85%) of the study's household participants engaged in open field defecation, and 84% of their under-five children did the same, which raised the risk of waterborne illnesses. About half of the mothers used to leave their young children's stools exposed. According to the DLHS-3 results, which showed that 33% of households in the Chittoor district of Andhra Pradesh possessed toilet facilities, the condition among the tribal community appears to be worse than that of the entire Chittoor district. Compared to 48% of all Andhra Pradesh households, 78% of ST households used open defecation. 81% of ST households in Andhra Pradesh lacked a sanitary latrine within the premises. A very high percentage of households used open-field defecation. Less than two-thirds of the study's household participants cleaned their hands with water and soap. More than 90% of the study participants' household members only used water to wash their hands before and after meals. Only one-third of the survey participants' households used water and soap after defecating. Water shortages have an impact on hand washing. Gaps in hygiene practices of Yanadi Tribe's households are a matter of public health concern.

Education levels of the mother and father were substantially correlated with higher WaSH scores, indicating superior WaSH practises in the current study.

Working and nonlaborer fathers had better WaSH practices. This could be mainly due to better child health care seeking decisions.

The population has better practices in certain areas of WaSH like water storage, waste disposal, and child body hygiene, while not so high in the other. This is because while WaSH is clubbed as one domain, it subsumes multiple domains like access to water supply and sanitation infrastructure, social customs and habits, and so forth. Poor WaSH mainly included not washing hands with soap after defecation and before and after eating food, eating unwashed fruits and vegetables, open field defecation, and eating raw vegetables. Predisposing factors for poor WaSH were water scarcity, especially in summers, and lack of access to drinking water. There are some limitations of this study. Study of WaSH practices was based on a report by the informant and some degree of recall bias cannot be ruled out. For a better understanding of behavior, which especially focuses on WaSH practices of a tribal population, one needs a qualitative study, which was beyond the scope of this study.

### **Sustainable WaSH Practices to reduce mortality under-five children:**

Improving water, sanitation, and hygiene (WASH) practices in Sugali households is crucial to reducing child mortality rates among the Sugali tribe. Here are sustainable WASH practices tailored to their specific needs and circumstances:

#### **Access to Clean Water:**

**Safe Water Sources:** Ensure access to safe and clean water sources, such as boreholes or protected wells, within a reasonable distance from households.

**Water Treatment:** Educate families on simple water treatment methods like boiling, chlorination, or using water filters.

#### **Sanitation Facilities:**

**Toilets:** Encourage the construction and use of hygienic, eco-friendly, and culturally appropriate toilets. Promote the digging of pit latrines with proper pits and ventilation.

**Handwashing Stations:** Install handwashing stations with soap and water near toilets and cooking areas to promote regular handwashing.

#### **Hygiene Education:**

**Hygiene Promotion:** Conduct regular hygiene education sessions focusing on proper handwashing, food handling, and personal hygiene.

**Child-Friendly Messaging:** Develop age-appropriate and culturally sensitive educational materials to engage children in learning about good hygiene practices.

#### **Community Engagement:**

**Community Committees:** Establish community WASH committees to oversee the maintenance of water sources and sanitation facilities, as well as to promote WASH practices.



Cultural Sensitivity: Respect and incorporate the Sugali tribe's cultural beliefs and practices into WASH programs to ensure acceptance and sustainability.

**Behaviour Change Communication:**

Health Messaging: Use local community leaders and elders to deliver health messages about the importance of WASH practices and their impact on child health.

Role Modeling: Encourage role modeling within the community by showcasing families that have successfully adopted WASH practices.

**Monitoring and Maintenance:**

Regular Inspections: Establish a system for regular inspections of water sources and sanitation facilities to identify and address maintenance needs promptly.

Training: Train local technicians and community members in basic maintenance and repair of water and sanitation infrastructure.

**Waste Management:**

Waste Disposal: Promote proper waste disposal practices to prevent environmental contamination and disease transmission.

Composting: Encourage composting of organic waste to improve soil fertility and reduce open defecation.

**Nutrition and Health Support:**

Nutrition Education: Integrate nutrition education into WASH programs to address malnutrition, which can exacerbate child mortality.

Access to Healthcare: Improve access to healthcare services for children, including vaccinations and treatment for common illnesses.

**Monitoring and Evaluation:**

Data Collection: Establish a system for collecting data on child health indicators, including child mortality rates, to track progress and make informed decisions.

Feedback Loops: Create mechanisms for gathering feedback from the community to adapt and improve WASH programs continually.

**Sustainability and Capacity Building:**

Local Capacity: Build local capacity by training community members in project management, operation, and maintenance of WASH infrastructure.

Resource Mobilization: Explore opportunities for sustainable funding sources, such as microfinance for sanitation facilities or income-generating projects.

Implementing these sustainable WASH practices, tailored to the specific needs and cultural context of the Sugali tribe, can contribute significantly to reducing child mortality rates and improving overall community health. Collaborative efforts involving community leaders, local organizations, and government agencies are essential for long-term success.

**5. Conclusion**

Water, sanitation, and hygiene practices are one of the largest causes of morbidity and mortality in children. The present study found a need for improvement in WaSH practices of the people of Yanadi Tribes, especially those related to the use of sanitary latrines, hand washing, and water treatment practices. Better integration into the society with a subsequent increase in access to sanitation infrastructure, economic schemes, and educational interventions is necessary for further improvements. A community-based intervention program needs to be carried out to educate the tribal people about appropriate water storage and retrieval methods and sanitation and hand washing practices.

## References

1. Acute respiratory infections; May 2016, [http://www.who.int/vaccine\\_research/diseases/ari/en/](http://www.who.int/vaccine_research/diseases/ari/en/)
2. Annual report 2012-2013, Ministry of Tribal Affairs, Government of India. <http://www.tribal.nic.in/writereaddata/AnnualReport/AR2012-13.pdf>.
3. Basu S. Dimensions of tribal health in India. *Health and Population—Perspectives and Issues*. 2000;23(2):61–70.
4. Black R. E., Victora C. G., Walker S. P., et al. Maternal and child undernutrition and overweight in low-income and middle-income countries. *The Lancet*. 2013;382(9890):427–451. doi: 10.1016/S0140-6736(13)60937-X.
5. Census of India. Census of India: Provisional Population Tables. New Delhi, India: Registrar general and census commissions of India; 2001.
6. Census of India. Census of India: Provisional Population Tables. New Delhi, India: Registrar General and Census Commissions of India. Government of India; 2011.
7. Children: reducing mortality. May 2016, <http://www.who.int/mediacentre/factsheets/fs178/en/>
8. Contend N., De Pasquale S., Mosler H.-J. Over-reporting in handwashing self-reports: Potential explanatory factors and alternative measurements. *PloS ONE*. 2015;10(8) doi: 10.1371/journal.pone.0136445.e0136445.
9. Diarrhoeal disease. May 2016, <http://www.who.int/mediacentre/factsheets/fs330/en/>
10. District level house hold & facility survey. India, 2007-2008, <http://www.rchiips.org/prch-3.html>.
11. Divya S., Saju C. R., Navya C. J., Joshy V. M., Jini M. P., Radhamani M. V. A study on selected behavioral factors of mothers influencing acute diarrhoea in under- five children in a rural part of Kerala, India. *International Journal of Community Medicine and Public Health*. 2016; 3: 2211–2216.
12. Kuberan A., Singh A., Kasav J., et al. Water and sanitation hygiene knowledge, attitude, and practices among household members living in rural setting of India. *Journal of Natural Science, Biology and Medicine*. 2015;6 (Supplement 1): S69–S74. doi: 10.4103/0976-9668.166090.
13. National Family Health Survey. India, 1998-1999, [http://www.rchiips.org/NFHS/pub\\_nfhs-2.shtml](http://www.rchiips.org/NFHS/pub_nfhs-2.shtml).
14. National family health survey-4. State Fact Sheet Andhra Pradesh, 2015-2016, [http://rchiips.org/NFHS/pdf/NFHS4/AP\\_FactSheet.pdf](http://rchiips.org/NFHS/pdf/NFHS4/AP_FactSheet.pdf).
15. Opara P., Alex-Hart B., Okari T. Hand-washing practices amongst mothers of under-5 children in port harcourt, Nigeria. *Paediatrics and International Child Health*. 2017 Feb;37(1):52–55.
16. Overview - National Commission for Scheduled Tribes. [http://ncst.nic.in/sites/default/files/documents/central\\_government/File415.pdf](http://ncst.nic.in/sites/default/files/documents/central_government/File415.pdf).
17. Peter R., Kumar K. A. Mothers' caregiving resources and practices for children under 5 years in the slums of Hyderabad, India: a cross-sectional study. *WHO South-East Asia Journal of Public Health*. 2014;3(3-4):254–265.
18. Rah J. H., Cronin A. A., Badgaiyan B., Aguayo V., Coates S., Ahmed S. Household sanitation and personal hygiene practices are associated with child stunting in rural India: a cross-sectional analysis of surveys. *BMJ Open*. 2015;5(2) doi: 10.1136/bmjopen-2014-005180.e005180
19. Ray S. K., Zaman F. A., Laskar N. B. Hand washing practices in two communities of two states of Eastern India: an intervention study. *Indian Journal of Public Health*. 2010;54(3):126–130. doi: 10.4103/0019-557X.75734.
20. The HUNGaMA Survey Report. 2011. <http://www.naandi.org/wp-content/uploads/2013/12/HUNGaMA-Survey-2011-The-Report.pdf>.
21. Victora C. G., Adair L., Fall C., et al. Maternal and child undernutrition: consequences for adult health and human capital. *The Lancet*. 2008;371(9609):340–357. doi: 10.1016/s0140-6736(07)61692-4.
22. Wilson J. M., Chandler G. N. Sustained improvements in hygiene behaviour amongst village women in lombok, indonesia. *Transactions of the Royal Society of Tropical Medicine and Hygiene*. 1993;87(6):615–616. doi: 10.1016/0035-9203(93)90260-W.