

Article

The Role of the Family in Social Awareness for Rationalizing the Consumption of Water Resources

Inaam Talib Hassan Al-Tamimi

University of Babylon, College of Education, Al-Musayyib Education Department, Al-Ma'rifa Secondary School for Girls

E-mail: inaamaltamime@gmail.com

Abstract: European research and policies for the years 2025 and 2026 focus on transforming the family from merely a “consumer” into a key partner in achieving water security. Our society faces increasing challenges related to water scarcity, water stress, and the expansion of economic activities. The family plays a pivotal role—starting with the mother/woman—in regulating wasteful behaviors and raising awareness of this vital issue, which represents a real threat to sustainability and development. Based on available data, a field survey of a number of families (questionnaires) was conducted regarding rationalization methods and daily water consumption. The study addresses social awareness of the importance of rationalizing water consumption, considering it a shared responsibility and a national duty borne by all members and institutions of society. It also seeks to draw conclusions and propose possible solutions to reduce forms of waste, avoid negative individual behaviors, and limit the adverse economic effects resulting from such waste. This research was conducted to compare certain variables related to water consumption among some households in rural and urban areas of Babylon Governorate. This was achieved by identifying some distinguishing characteristics of girls and mothers in the families of the research sample, evaluating whether there are significant differences in the average expenditure ratios of household water consumption between rural and urban areas, and examining the correlational and causal relationships between some characteristics of the respondents as independent variables and the main household budget as a dependent variable. The study was initially conducted on a random sample of 50 families from rural and urban areas in Babylon Governorate. Subsequently, the research procedures were applied to 300 families selected from both environments. Data were collected through questionnaires administered via personal interviews, and the information was analyzed using percentages, Pearson’s simple correlation coefficient, the t-test, and linear regression analysis as statistical methods.

The most important research findings indicated that:

1. The study provides analytical results regarding the culture of consumption rationalization among the surveyed households.
2. The study presents the methods adopted by families in their daily domestic water consumption.
3. Variables such as age of the families in the research sample, number of years of education, family size, and family income contributed to explaining the variation in daily consumption expenditure ratios in both urban and rural areas.

The study reached a number of recommendations and possible proposals, the most important of which are: presenting an analysis of the daily consumption of the surveyed households, evaluating the most important methods for rationalizing daily household water consumption, and identifying the role of various institutions and authorities in promoting water consumption rationalization.

Keywords: The family’s role in social awareness, Rationalizing water consumption



This is an open-access article under the [CC-BY 4.0](https://creativecommons.org/licenses/by/4.0/) license

1. Introduction

“And We made from water every living thing. Will they not then believe?” (Qur’an, Al-Anbiyā’ 21:30).

In the last quarter of the twentieth century, the Arab states began to suffer a water crisis due to rising demand for water driven by population growth and recent technological advances. This situation is compounded by weaknesses in Arab water policies caused by problems arising from neighboring non-Arab states’ control over some water sources. Whatever support or planning states undertake for water resources, the water gap between supply and demand will widen unless decisive measures are taken. Those measures should focus on educating and raising public awareness, using conservation devices, detecting and repairing leaks in water networks — the basic principles of water consumption — charging consumers the actual cost of water (monthly collection), and reusing treated wastewater. Mustafa Nouri Osman (1)

The worsening problems related to the consumption of water, food and energy, the overall weakness of consumer culture, and the growing negative indicators of consumption culture on social, economic and cultural aspects require intensified efforts to develop areas of consumption rationalization so that they become among the most important goals of societies. Resource rationalization is an essential element of social and economic development; consequently, it is important to encourage the organization of individual and family consumption. Ahmed Ibrahim (2)

To close the awareness gap among citizens and highlight the role of parents in transmitting the culture of “wise use” to future generations — including the behavior of the homemaker inside the house — greatly shapes how family members will be raised. The mother is the first school: if children observe their mother conserving water in the kitchen, in cleaning the house, and in related tasks, they learn those habits from an early age. The same applies to irrigating crops: children learn to rationalize water use and assign it real value. This is important because approximately 90% of consumed water resources go to the agricultural sector. Ibrahim Ahmed Said (3)

(1) Mustafa Nouri Osman, *Abjadiyat Tarshid Istihlak al-Miyah (Basics of Water Consumption Rationalization)*, 1st ed., Saudi Arabia, 2000, p.95.

(2) Ahmed Ibrahim, *Managing Life in Consumption Rationalization*, 2010, p.3.

(3) Ibrahim Ahmed Said, *Strategy for Arab Water Security*, 1st ed., Dar Al-Awal for Publishing, Damascus, 2002.

Family awareness begins inside the home and extends outward: the family transmits habits and values and anchors sustainable development by what its members receive in schools, workplaces and social environments. Thus the family becomes an engine of positive change for preserving water resources as an issue of national and ethical security.

Importance of the Current Study

1. At the family level: the study links family behavior, as the primary social institution, to preserving water resources and to social awareness aimed at organizing consumption policy for this national resource — with the goal of maintaining environmental balance, ensuring sustainability, and enabling future development of outcomes.

2. At the social environment level: the study focuses on middle and secondary school female students and their families as the research sample; they represent a highly important social cohort — the next generation’s mothers and the expected agents of positive change at family, social, and environmental levels.

3. At the scientific level: the study’s importance stems from the relative scarcity of Arab and foreign studies that have addressed the family’s role in spreading consumer awareness about water resources; therefore, this research contributes scientifically to the literature in this field.

4. Practical importance: the findings may help draw the attention of curriculum planners to the possibility of incorporating elements into school subjects that develop awareness and a culture of water consumption rationalization and help sustain it.

This research will reveal mechanisms by which the family can demonstrate its role in spreading community awareness about rational water consumption and transform the household into a micro-model of water sustainability that contributes to building a societal culture that preserves water for future generations — addressing a crucial threat to the world's future.

Research Problem and Questions

While working as a teacher at a school in Babylon Governorate, the researcher observed some student behaviors such as pouring water and occasionally leaving taps open. The problem emerged more clearly during personal interviews with students and their families to identify behavioral patterns in some households. The interview questionnaire consisted of twenty questions related to the extent to which families activate their awareness-raising role in developing a culture of water-use rationalization and the reflection of this family culture on the wider community.

The current study raises the following questions:

1. What is the family's role in spreading awareness of a culture of rationalizing water resources?
2. What are the methods used to raise awareness of the culture of rational water consumption?
3. What are the main challenges facing families and society in promoting awareness of consumption rationalization?

1. Second:	Research	Objectives
This research was conducted with the aim of comparing variables related to daily household water consumption among families in some villages and the city in Babylon Governorate, through achieving the following objectives:		
1. Identifying some distinguishing characteristics of girls and housewives in the research sample, as well as the level of knowledge and daily practices of families among a sample of female students and their families in both rural and urban areas in dealing with this vital resource.		
2. Determining the percentage of daily water consumption among the families in the research sample and examining the impact of the culture of rationalization within families in rural and urban areas in preserving water resources and ensuring their sustainability.		
3. Evaluating the extent to which significant differences exist in the average daily consumption rates between families in rural and urban areas.		
4. Studying the correlational and causal relationships between certain characteristics of the families in the study sample as independent variables and the daily household water consumption as a dependent variable.		

Third: Research Limits

This research was conducted within the following limits:

1. Human limits:
The research sample consisted of 300 female students and their families from rural and urban areas, and these families were selected randomly.
2. Spatial limits:
The study was conducted in Babylon Governorate, including some villages near the city. Data were collected through personal interviews with these families and field visits. The data were gathered using a questionnaire form specifically designed for this type of research after conducting a pilot test on an exploratory sample. The necessary items were then determined to study the research problem, and the statistical results were processed using a computer to diagnose the problem.
3. Temporal limits:

The questionnaire forms were administered from mid-July 2025 to January 2026.

Research Hypotheses

1. There are statistically significant differences between the average daily water consumption rates of the surveyed families in rural and urban areas.
2. There is a significant correlational relationship between the ages of girls and mothers in the surveyed families, the number of years of education, and the level of rationalization of daily household water consumption as an independent variable, and the monthly household expenditure level as a dependent variable.

2. Materials and Methods

Research Methodology and Statistical Treatments

This research falls within the framework of descriptive–analytical studies, in addition to the functional approach that highlights the role of the family as a small social institution. It examines the optimal methods of water use in applying the culture of rationalizing household consumption in the kitchen, home, bathroom, and other household facilities.

Research Sample

1. Exploratory sample: Consisted of 50 families randomly selected from rural and urban schools in Babylon Governorate. This pilot sample was used to refine the study instruments (general and specific data forms for the students) and a questionnaire on some families' behaviors regarding household water consumption.
2. Main sample: Consisted of 300 families randomly selected from rural and urban areas and representing different educational, cultural, and social levels.

Sixth — Research Terms (Definitions)

1. Family role: Refers to the functions of the family and its position as a subunit within the broader social structure. This topic has been examined by many sociological perspectives and theories, the most important of which is structural functionalism.
2. Social awareness (public awareness): A set of organized efforts carried out by a particular body aimed at promoting certain ideas or increasing acceptance of a social idea, in order to bring about changes in individuals' attitudes and behaviors and persuade them to adopt a specific social idea or behavior — or to promote a service or product within a given period to achieve a defined result and elicit a response that aligns with the communicator's objective.
3. Rationalizing consumption (consumption rationalization): The optimal use of available resources to meet needs with balance and moderation, avoiding excess or waste in order to achieve human benefit (Kamel al-Qaisi, 2008). It is also defined as the skills and perceptions required for daily life activities to make the most effective use of available resources so that the individual attains the maximum possible satisfaction (Wafaa Shalabi et al., 2012).
4. Rational (Household) Water-Use Rationalization

Defined as the optimal use of water to benefit from it using the smallest quantities and lowest possible financial costs across all activity domains. It is also described as conscious and deliberate water use based on knowledge and experience about water problems, and as the optimal, rational use of water and avoidance of wasteful usage. Operationally, it is the set of measures and procedures that the family adopts, serving as an exemplary social model, to ensure optimal household use of water resources.

Selected References (as cited in the original Arabic text)

- Haider Jawad Kazim, The Educational Family Role in Changing Social Problems, University of Wasit, College of Arts, Larak Journal, vol. 17, no. 4, 2025.
- Fouadi Abdul Munim al Bakri, Social Marketing and Planning Media Campaigns, Cairo, 2007, p. 61.
- Kamel al Qaisi, Rationalizing Consumption in Islam, 1st ed., Dubai: Dubai Islamic Affairs and Charitable Activities Department, 2008.
- Wafaa Fouad Shalabi; Hanan Mohamed Abu Seiri; Sana Mohamed al Najjar, Consumer

Culture and Consumption Rationalization, Cairo: Dar Al Kutub for Distribution and Publishing, 2012.

4- Rationalizing Water Consumption:

It is the optimal use of water to benefit from it with the least possible quantity and lowest financial cost across all areas of activity. (1) It is also the conscious and deliberate use of water based on knowledge and experience regarding water-related issues. (2) Additionally, it refers to the optimal and rational use of water and avoiding wasteful consumption. (3)

Operationally, it is defined as the set of measures and procedures adopted by the family, reflecting its ideal role as a social model to be emulated, aimed at achieving the optimal use of water resources at the household level.

Chapter Two – Literature Review

“The Family’s Role in Promoting Consumer Awareness”

The family is considered the primary channel for spreading the culture of rationalization in society, as it is one of the most important social institutions representing the forces and capacities of the community. It is capable of guiding and rationalizing consumption and bears the greatest responsibility for maintaining societal balance and stability.

The family contributes to environmental protection by encouraging children to acquire a set of environmental values. Therefore, the family must work on developing its parenting methods and family upbringing practices to broaden children’s horizons, enhance their knowledge, and raise their awareness of how to interact with and preserve the environment. This also includes increasing their understanding of the impacts of various human activities on the environment, especially those that lead to its deterioration and make it environmentally unbalanced, and consequently, unsustainable for life. Without this awareness, children will be unable to protect their environment. (4)

“Educational Methods Used to Promote a Culture of Water Rationalization”

Educational institutions are among the most important means of achieving water education through personality development and cultivating awareness of rational water use among students.

References:

1. Hassan Youssef Ghanem, 2005, The Role of Women in Rationalizing Water Consumption, Amman, Jordan: Iffat Al-Hindi Center for Electronic Guidance, International Institute for Women’s Solidarity.
2. Abdul Rahman Salouha Mahmoud, Assessing Women’s Awareness for Rationalizing Water Consumption: An Analytical Perspective from Social Work Practice, Faculty of Social Work, Helwan University, 2010.
3. Wassel Mohamed Shehata, Libyan Women and Household Water Consumption Rationalization: A Field Study in Tobruk, Journal of the Faculty of Arts, Port Said University, Egypt, 2013, Issue 1.
4. Samia Ibrahim, The Role of the Family in Developing Environmental Values among Children, University of Oum El Bouaghi, Department of Social Sciences, Algeria, Journal of Babylon University for Humanities, Vol. 26, Issue 9, 2018.

Achieving Students’ Cognitive and Social Development through Education

Cognitive and social growth of students is achieved through school curricula, as well as the educational guidance and directives provided by school administration, teachers, and supervisors. (1)

It is essential to promote water culture and protect it from pollution in schools by organizing workshops and seminars with students, emphasizing the importance of rational water consumption and preservation. Students can be taught practical ways to use minimal amounts of water, assigned roles as monitors during breaks, and made responsible for conserving water. Competitions can be organized, allowing students to create water conservation posters, select the best ones, and display them in restrooms. Additionally, students should be encouraged to plant drought-tolerant trees. (1)

“Children’s Participation in the Culture of Rationalization”

The family is considered the primary channel for spreading a culture of rationalization in

society, as it is one of the most important social institutions representing the forces and capacities of the community and capable of guiding consumption. It also bears the greatest responsibility for societal balance and stability.

The socialization process instills values of superficial consumption in children. Families may inadvertently teach negative consumption habits, and women play a major role in cultivating a culture of rational consumption. Mothers serve as role models for their children through family management, budgeting, and balancing household inputs and outputs. (2)

Rationalizing consumption is a vital necessity of life that should be applied as a daily practice. It is also emphasized in Islamic teachings, which guide believers to organize expenditures and avoid wasteful spending. Extravagance in blessings and lack of respect for their value are explicitly discouraged, reflecting the principle of consumption rationalization encouraged by God and His Messenger. (3)

References:

1. Qais Hammadi Jabr, 2011, Awareness and Water Education, Journal of Basic Education Research, Al-Mustansiriya University, Vol. 11, p.113.
2. Intisar Al-Aqeebi Masoud, The Family's Role in Promoting a Culture of Consumption during Crises, University of Benghazi, Faculty of Arts, Journal of the Faculty of Arts, Issue 45, August.
3. Houria Sharif Mohamed, 2018, Contemporary Consumer Economics, 1st ed., Shebin El-Kom, Egypt, Al-Hanafi Modern Press.

"Factors Influencing Rationalization"

1. Cultural Factors:

The social climate, traditions, and social values are among the most influential cultural factors affecting consumer behavior. Media plays a significant role in shaping an individual's consumer personality through advertising and information dissemination. Cultural factors that an individual possesses have a fundamental impact on behavioral patterns, and throughout life, a person develops their culture through exposure to experiences and situations that strongly influence their beliefs and opinions. (1)

2. Social Factors:

These factors play a major role in shaping consumer behavior. Among the most influential are reference groups to which an individual belongs and is influenced by, either directly, such as family, work groups, and friends (called primary groups), or indirectly, such as unions and clubs, which have less interactive influence. A consumer lacking experience may seek help from others before making a purchase decision and may resort to imitation if they lack expertise. (2)

3. Psychological Factors:

These are among the most important factors directing consumer behavior toward one consumption pattern over another. Psychological factors include needs, motives, perception, and attitudes, which interact with each other and subsequently influence and shape consumer behavior. (3)

4. Economic Factors:

These are among the most significant influences on consumer behavior. A consumer's desires do not represent actual demand unless accompanied by adequate purchasing power. Several elements affect household consumption, including: income level, as the monthly household income is a key factor in determining consumption and family expenditure. (4)

References:

1. Al-Haroun, Emad Ahmed & Ahmed El-Sayed Ahmed (2011), Attitudes toward Consumer Credit and Its Impact on Determinants of Consumer Behavior: An Applied Study on Kuwaiti Citizens, Journal of Global Commerce Research, Faculty of Commerce, Alexandria University, Vol. 48, Issue 1.
2. Al-Ghadeer, Hamad & Rashad Al-Sa'ed (2010), Consumer Behavior: An Integrated Approach, Dar Zahran, Amman, Jordan.

3. Abu Qahaf, Abdel Salam (2010), *Marketing: A Contemporary Perspective*, Al-Ishaa Library for Printing and Publishing, Alexandria.

4. Abdel Hamid, Abdel Muttalib (2010), *Macroeconomics: Theory and Policy*, University Press, Alexandria.

5- Advertising Campaigns:

Advertising plays a strategic role in influencing consumer behavior patterns, as it possesses tools that can create perceived needs for the consumer and affect their emotions, perceptions, feelings, knowledge, and beliefs. Consumers tend to be similar in their needs, motives, tastes, and culture. (1)

6- Key Media Tools Include:

1. Producing television programs about water resources and ways to preserve them.
2. Using commercial posters, weekly magazines, and printed materials.
3. Placing signs and guidance boards in public areas aimed at educating citizens on the importance of rational water consumption.

A- Previous Studies on the Family's Role in Social Awareness:

1. Miller (2010):

This study aimed to determine whether social awareness campaigns targeting university students in the U.S. focused on environmental awareness had an impact on consumption levels, greenhouse gas emissions, and global warming. The study concluded that it is important to focus on social awareness campaigns to enable students to regulate energy consumption, understand reasons for excessive waste, and attempt to change daily consumption routines. (2)

2. Shimazaki (2015):

This study evaluated intervention campaigns aimed at changing health behavior in Tokigawa City, Japan, focusing on citizen awareness of the campaign and the importance of media in raising awareness. The study concluded that citizens exposed to the campaign slogans and programs demonstrated higher awareness of health instructions. (3)

3. Seimetz et al. (2016):

The study aimed to assess the role of awareness campaigns related to hygiene, particularly hand hygiene after using the restroom and associated behaviors.

References:

1. Kotler, P. (2003), *Marketing Management*, International Edition, Prentice Hall, USA.
2. Miller, Laura Little (2010), *Measuring the Efficacy of an Energy and Environmental Awareness Campaign to Effectively Reduce Water Consumption*, Ph.D. Dissertation, The Pennsylvania State University.

3. Shimazaki, Takashi & Takenaka, Koji (2015), *Evaluation of Intervention Reach on a Citywide Health Behavior Change Campaign: Cross-Sectional Study Results*, *Health Education & Behavior*, Vol. 42.

The study was conducted through interviews with the research sample, applying the five-factor model: attitudes, risks, rules, capabilities, and self-regulation. By focusing on behavioral determinants of individuals, the study concluded that repeating such campaigns can achieve their intended goals. (1)

4- Karima (2018):

This study aimed to assess the effectiveness of awareness campaigns in guiding women to prevent breast cancer, evaluating how much they benefited from these campaigns and the impact on their health awareness levels. The study concluded that it is important to promote early cultural and health awareness, focusing on multiple preventive methods. (2)

B- Previous Studies on the Culture of Rational Water Consumption:

1. Mansour (2003):

This study aimed to identify patterns of energy and water consumption and methods of household rationalization. The study concluded that it is important to develop awareness of water and energy consumption and recommended the use of educational programs to increase awareness

of rational water and energy use.

2. Abdul Rahman (2010):

This study evaluated women's awareness in rationalizing household water use by identifying key knowledge and information about water consumption and rationalization, as well as behaviors related to water conservation by women. The study found a lack of information on rational consumption, such as the cost of desalination and daily per capita water use. Moreover, most participants believed that excessive water use was linked to personal hygiene and were indifferent to potential freshwater crises, often ignoring advertisements warning about water scarcity.

3. Bahloul & Houwam (2015):

This study examined the contribution of water consumption rationalization by studying the experiences of Australia and Germany in implementing a culture of rational use and conservation. The results emphasized the importance of reducing water use in the industrial sector, training staff on modern water technologies, and intensifying awareness campaigns for household water use, including recycling wastewater through treatment for safe human consumption.

References:

1. Seimetz, E. et al. (2016), Effects of an Awareness Raising Campaign on Intention and Behavioural Determinants for Handwashing, *Health Education Research*, Vol. 31, No. 2.

2. Karima, Driyal (2018), The Role of Awareness Media Campaigns in Promoting Early Detection Culture for Breast Cancer, Unpublished Master's Thesis, Faculty of Social and Human Sciences, Saida University, Algeria.

Brandon (2017) Study:

This study aimed to strengthen partnerships between government and private institutions to influence public awareness in order to preserve the importance of freshwater. The study concluded the significance of collaborative roles between governments and families in spreading consumer awareness to conserve water and ensure its sustainability for future generations. It also found that individual consumption patterns vary according to cultural background, emphasizing in its recommendations the importance of regular guidance on water conservation behavior. (1)

Although not all previous studies addressed every aspect of the current research, the main points emphasized can be summarized as follows:

1. Rationalizing water consumption has become an essential necessity, as it is a comprehensive societal issue requiring cooperative efforts from individuals, families, and government institutions supporting the culture of rational use.

2. Despite differences in rationalization strategies, they converge on the importance of preserving water resources, particularly freshwater for household consumption, and stress the development of adaptive rationalization programs suited to the type and characteristics of the community.

3. Studies highlighted the family as an influential social unit, emphasizing the importance of role distribution among family members in consumption decisions.

Chapter Three: Research Methodology and Procedures

A) Main Method: Descriptive-Analytical

The descriptive method is a systematic scientific approach used to identify a set of data, information, and precise facts related to a topic, interpret them, and reveal all related aspects. Its goal is to diagnose, improve, and develop solutions based on the findings. (2)

References:

1. Brandon, McKee et al. (2017), Building Extension Partnerships with Government to Further Water Conservation Efforts, *Journal of Agricultural Education*, Vol. 58, No. 2.

2. Rushdi, Ahmed Taima (2004), Content Analysis in the Humanities: Concept, Principles, and Uses, Cairo, Dar Al-Fikr Al-Arabi, p.70.

B) Research Tools:

First: Questionnaire

After reviewing the literature and previous studies, the questionnaire items were prepared as

follows:

1. To identify recommendations from local conferences relevant to the current research problem.
2. To provide questions related to general information about household water consumption behavior (sample families).
3. To assess the types of daily practices in the culture of consumption rationalization.
4. To identify the educational tools used within the family.
5. To explore challenges and difficulties faced by families.

Second: Structured Personal Interviews with the Sample Families

1. Covering different age stages.
2. Measuring the level of acquired family awareness.
3. Observing the behavior of the sample families with their consent and maintaining confidentiality of information.

Third: Research Population and Sample

- Population: Families in Babylon Governorate, including some villages (e.g., Oulad Muslim and surrounding areas) and some cities (Al-Musayyib and Al-Mahawil districts).
- Sample: A stratified random sample based on:
 - o Educational level of family members
 - o Economic level
 - o Family size
 - o Type of residence

Proposed sample size: 300 families

The questionnaire was designed to determine the main axes according to the following steps:

- Drafting questionnaire items according to their priorities.

A- Research Instruments:

First: Questionnaire on families' attitudes toward the culture of household water consumption.

1- Questionnaire Validity:

Validity refers to the ability of the questionnaire to measure what it was designed to measure.

Internal consistency validity was assessed by calculating the correlation between the total score for each axis and the overall total score of the questionnaire. The validity was measured using the internal consistency method, by computing the Pearson correlation coefficient between the total score of each axis.

Expert validity:

The questionnaire was initially drafted and then presented to a group of specialized experts in curriculum design and educational fields. They were asked to evaluate the priority of the axes. Necessary modifications were made in terms of deletion, addition, or revision. After the adjustments, the questionnaire consisted of 25 items distributed across three main axes:

1. Rationalizing water use in the kitchen
2. Rationalizing water use in the bathroom
3. Rationalizing water use in other facilities

To answer the research questions, the 25-item questionnaire was developed to cover the aspects of the problem under study. The instrument was prepared by the researcher in several stages, with the most important being a review of the theoretical background on the family's role in promoting social awareness of water consumption culture.

Data were analyzed and statistical treatments were performed using SPSS to extract study results and examine the relationships between study variables. The validity of the research hypotheses was tested using frequencies, percentages, means, standard deviation, Pearson and Spearman correlation coefficients, and the T-test.

Correlation coefficients between each axis score and the total score of families' attitudes toward the culture of rational consumption:

Consumption Rationalization Axis	Correlation Coefficient	Significance
Rationalizing water in the kitchen	0.753	0.01
Rationalizing water in the bathroom	0.909	0.01
Rationalizing water in other facilities	0.837	0.01

It is evident from the table above that all correlation coefficients are significant at the 0.01 level, indicating the validity and homogeneity of the questionnaire axes.

Questionnaire Reliability:

Reliability refers to the accuracy of the questionnaire in measurement and observation, its consistency with itself, and the consistency of information provided about the respondent's behavior. It is measured by the ratio of variance in scores on the scale, reflecting the actual performance of the respondents. Reliability was calculated using

1. Cronbach's alpha coefficient.
2. Split-half method.
3. Guttman (coefficient).

Table — Reliability coefficients for the questionnaire axes (families' attitudes toward a culture of rational consumption)

Consumption-rationalization axis	Cronbach's Alpha	Split-half (range)	Guttman
Rationalizing water in the kitchen	0.864	0.827–0.827	0.851
Rationalizing water in the bathroom	0.789	0.740–0.813	0.775
Rationalizing water in other facilities	0.917	0.875–0.945	0.908
Overall questionnaire reliability (rational consumption culture)	0.822	0.782–0.855	0.810

3. Results and Discussion

Current study results (summary)

The study's results relate to the reality of Iraqi families and changes in their life patterns, openness, and new influences entering Iraqi society.

Significance of differences in rationalizing household water consumption for some dwelling facilities

(Table columns: Variable — City (n=82): Mean (M) and SD — Rural (n=118): Mean (M) and SD — t-value — Difference between means — p-value — Significance)

Variable	City (n=82) M	SD	Rural (n=118) M	SD	t	Mean diff.	p-value	Significance
Rationalizing water in the kitchen	37.59	4.543	34.29	3.901	5.493	3.30	0.000	significant (p≤0.001)
Rationalizing water in the bathroom	27.63	3.264	26.36	3.302	2.131	1.10	0.034	significant (p≤0.05)
Rationalizing water in other facilities	35.20	3.501	34.93	4.191	0.466	0.26	0.642	not significant
Total rationalization score	100.40	8.511	95.85	8.459	3.746	4.57	0.000	significant (p≤0.001)

The table illustrates statistically significant differences at significance levels of 0.05 and 0.01 between the level of family awareness in rural and urban areas regarding total household water consumption, with t-values of 3.746, 2.131, and 5.493, respectively. Families in urban areas achieved the highest average scores, reaching 37.59 ± 4.543 for the water conservation variable in the kitchen, 27.63 ± 3.264 for water conservation in the bathroom, 35.20 ± 3.501 for water conservation in other facilities, and 100.40 ± 8.511 for total consumption conservation.

The researcher attributes this higher rate to several factors, including diverse household consumption patterns in daily practices, such as leaving taps running during washing or car cleaning, as well as housing characteristics and higher living standards associated with increased water consumption. Additionally, population density in the city and the efficiency of infrastructure are considered key drivers of higher consumption in urban areas compared to rural areas.

Variable (category)	Rural — Count (n=150)	Rural — %	Urban — Count (n=150)	Urban — %
Children's age — Small (< 34 years)	64	42.7%	78	52.0%
Children's age — Medium (34–49)	58	38.7%	46	30.7%
Children's age — Large (50–65)	28	18.7%	26	17.3%
Years of children's education (1–9 years)	117	78.0%	92	61.3%
Years of children's education (10–18 years)	29	19.3%	28	18.7%
Years of children's education (19–26 years)	4	2.7%	6	4.0%
Number of years children are enrolled — (1–7 years)	81	54.0%	51	34.0%
Number of years children are enrolled — (8–14 years)	32	21.3%	30	20.0%
Number of years children are enrolled — (15–21 years)	37	24.7%	69	46.0%
Family size — Small (< 5 persons)	79	52.7%	8	5.3%
Family size — Medium (5–7 persons)	61	40.7%	55	36.7%
Family size — Large (> 7 persons)	10	6.7%	87	58.0%
Level of conservation practices — Low (< 17 points)	20	13.3%	19	12.7%
Level of conservation practices — Medium (17–23 points)	122	81.3%	89	59.3%
Level of conservation practices — High (> 23 points)	8	5.3%	42	28.0%

The data table shows that the majority of sampled households (parents and children), between 81.4% and 82.7%, are under 45 years old in both rural and urban areas. These ages are considered young with respect to household water-use culture and are expected to affect daily consumption — especially since the share of educated individuals reaches about 33% and 37.3% in rural and urban areas, respectively (including primary, intermediate, university and postgraduate education). It also appears that the proportion of children with low to medium educational attainment in households is about 54.5% to 75.3% in the rural and urban samples, considered low-to-medium education levels respectively.

Regarding household size, the results indicate that more than half of the sampled families fall into the small household category, at approximately 52.7% in both rural and urban areas. Concerning

levels of water-conservation practices, data analysis shows that the vast majority of sampled households—about 86.3% to 87.3% in both rural and urban areas—have low to medium conservation practices, which indicates a need for guidance and training programs to improve water-saving behaviours.

Area	Mean Score of Expenditure Ratio	Standard Deviation	t-value	Significance Level
Rural	60.85	19.54	1.168	0.244
Urban	61.37	17.80	—	—

The results of the above table for the T-test examining the difference between the mean household water consumption ratios of the sampled families indicate that there are no statistically significant differences between the mean household water consumption scores in rural and urban areas.

Variable / Characteristic	Partial Regression Coefficient	t-value	Significance Level (t)	Correlation Coefficient
Girls' Age	0.985	1.764	0.080	0.172 *
Years of Education of Sampled Individuals	0.780	1.594	0.113	-0.447 **
Family Size	1.107	0.700	0.485	0.252 **
Monthly Income	0.700	2.368	0.019	-0.318 **

Significant at the 0.05 level; Multiple correlation coefficient (R) = 0.506

** Significant at the 0.01 level; $R^2 = 0.261$; F-value = 7.572

The results of the above table for the T-test examining differences between the mean household consumption scores of the sampled families indicate that there are no statistically significant differences in the mean household water consumption scores between rural and urban families.

4. Conclusion

These results can be interpreted as follows: as both the age of the girl and family size increase, the daily household water demand rises due to needs for cooking, bathing, and other household facilities, such as garden watering and washing of wheels and cars. This is explained by the fact that water is an indispensable resource, despite some wastage. Conversely, water wastage decreases in households where a higher proportion of members have attained a higher educational level, as education provides essential knowledge and information on conservation and consumption culture. Additionally, the higher age of the girl or housewife provides the necessary experience for household water use within permissible limits.

The current study concludes the following:

1. The level of consumption conservation was low to medium, at 86.3% and 87.3% in rural and urban areas, respectively.
2. The results of water consumption by some sampled families ranged from “agree” to “somewhat disagree” at 98% and 84% in rural and urban areas, respectively.
3. There were no statistically significant differences in the mean daily household water consumption scores between rural and urban areas.
4. The variables of family age, years of education, family size, and income explained 26% of the variance in daily consumption ratios in rural areas.
5. The variables of family age, years of education, family size, and income explained 24% of the variance in daily consumption ratios in urban areas.

Recommendations:

In light of the results of this study, the following recommendations can be proposed:

1. Raise family awareness about the importance of continuously monitoring daily household water consumption and encourage family members to adopt water-saving habits.
2. Implement daily, weekly, or periodic programs for families to promote awareness and culture of water conservation, change wasteful behaviors, and conduct field studies to explore the relationship between water scarcity and smart methods to reduce water wastage.
3. Smart Meters: Encourage households to use digital monitoring systems that immediately detect leaks and provide real-time consumption data.
4. Emphasize the importance of technology in the design and manufacturing of smart faucets to reduce household water wastage and consumption.
5. Activate the role of educational and religious institutions in spreading water awareness and promoting a culture of responsible consumption.
6. Organize regular conferences and scientific workshops and invite citizens to attend to develop and promote a culture of daily water conservation.
7. Highlight the role of women as an important and influential factor, including their supervisory role within the household to control and reduce water waste.
8. Encourage relevant regulatory institutions to oversee the provision and efficient use of water for gardens and plants.

The awareness of each individual in society—and globally—is the only way to achieve safety and prevent harm to the planet in ways that affect millions or even billions of people. Every individual must start by conserving water to ensure a better future.

Proposals:

In light of the current study's findings and recommendations, the following proposals are suggested:

1. Import modern devices for detecting water leaks in pipes.
2. Use human-sensitive faucets and appropriate, non-wasteful drainage systems in homes, hospitals, universities, schools, government institutions, and other facilities.
3. Educate students in primary, middle, and high schools about the culture of water consumption conservation.

REFERENCES

- [1] The Holy Qur'an: Surah Al-Anbiya, verse 30.
- [2] Ibrahim, "Life Management in Consumption Conservation," Cairo: Academic House for Sciences, 2010, p. 3.
- [3] A. Saeed, "Arab Water Security Strategy," 1st ed., Dar Al-Awael for Publishing, Damascus, 2002.
- [4] Qahaf and A. S. Abdul Salam, "Marketing: A Contemporary Perspective," Alexandria: Al-Ishaa' Library for Printing and Publishing, 2010.
- [5] Al-Aqeebi, "The Role of the Family in Promoting a Culture of Consumption During Crises," University of Benghazi, College of Arts, College of Arts Journal, Issue 45, Aug. 2010.
- [6] H. Al-Ghadeer and R. Al-Saaed, "Consumer Behavior: An Integrated Approach," Amman, Jordan: Dar Zahran, 2010.
- [7] F. A. Al-Bakri, "Social Marketing and Media Campaign Planning," Cairo, 2007, p. 61.
- [8] E. A. Al-Haroun and A. A. Al-Sayed Ahmed, "The Trend Towards Consumer Credit and Its Impact on Determinants of Consumer Behavior: An Applied Study on Citizens of Kuwait," Journal of Global Research, Faculty of Commerce, Alexandria University, vol. 48, no. 1, 2011.
- [9] Republic of Iraq, Ministry of Planning, National Development Plan (2010–2014), Iraq, 2010.
- [10] H. Y. Ghanem, "The Role of Women in Water Conservation," Amman, Jordan: Iffat Al-Hindi Center for E-Guidance, International Institute for Women Solidarity, 2005.

-
- [11] H. S. Mohamed, *Contemporary Consumer Economy*, 1st ed., Shebin El-Kom, Egypt: Al-Hanafi Modern Press, 2018.
 - [12] H. J. Kazem, "The Family's Educational Role in Changing Social Problems," *University of Wasit, College of Arts, Larac Journal*, vol. 17, no. 4, 2025.
 - [13] T. Rushdi, *Content Analysis in the Humanities: Its Concept, Foundations, and Applications*, Cairo: Dar Al-Fikr Al-Arabi, 2004, p. 70.
 - [14] S. Ibrahim, "The Role of the Family in Developing Environmental Values in Children," *University of Oum El Bouaghi, Department of Social Sciences, Algeria, Journal of Human Sciences, University of Babylon*, vol. 26, no. 9, 2018.
 - [15] S. I. Mansour, "An Analytical Study of Energy and Water Consumption Patterns and Methods of Rationalization in the Household Sector," *Unpublished Master's Thesis, Faculty of Home Economics, Helwan University*, 2003.
 - [16] R. S. Mahmoud, "Estimating Women's Awareness of Water Conservation: An Analytical Perspective from the Practice of Social Work," *Faculty of Social Work, Helwan University*, 2010.
 - [17] A. Abdulmuttalib, *Macroeconomics: Theory and Policies*, Alexandria: Al-Dar Al-Jamia'iyya, 2010.
 - [18] Q. H. Jabr, "Water Awareness and Education," *Journal of Basic Education Research, Al-Mustansiriya University*, vol. 11, 2011, p. 113.
 - [19] Al-Qaisi, *Consumption Rationalization in Islam*, 1st ed., UAE: Dubai Department of Islamic Affairs and Charitable Work, 2008.
 - [20] Driyal, "The Role of Awareness Media Campaigns in Promoting Early Detection of Breast Cancer," *Unpublished Master's Thesis, Faculty of Social and Human Sciences, Saida University, Algeria*, 2018.
 - [21] Bahloul and K. Hassina, "Rationalizing Water Use as an Approach to Achieve Sustainable Development – Presenting the Experiences of Australia and Germany as Models of Sustainability," *Al-Hikma Journal for Economic Studies, Al-Kunuz Al-Hikma Publishing and Distribution, Algeria*, 2015.
 - [22] A. R. S. Mahmoud, *Macroeconomics: Theory and Policies*, Alexandria: Al-Dar Al-Jamia'iyya, 2010.
 - [23] A. R. S. Mahmoud, "Estimating Women's Awareness of Water Conservation: An Analytical Perspective from the Practice of Social Work," *Proceedings of the 23rd Scientific Conference on Social Work, Helwan University, Cairo*, vol. 1, 2010.
 - [24] M. N. Othman, *The ABCs of Water Conservation*, 1st ed., Saudi Arabia, 2000, p. 95.
 - [25] W. M. Shehata, "Libyan Women and Household Water Conservation: A Field Study in Tobruk," *Journal of the Faculty of Arts, Port Said University, Egypt, Issue 1*, 2013.
 - [26] W. F. Shalaby, H. M. Abu Sairi, and S. M. Al-Najjar, *Consumer Culture and Consumption Conservation*, Cairo, Egypt: Dar Al-Kutub for Distribution and Publishing, 2012.
 - [27] McKee et al., "Building Extension Partnerships with Government to Further Water Conservation Efforts," *Journal of Agricultural Education*, vol. 58, no. 2, 2017.
 - [28] *Environmental Awareness Campaign to Effectively Reduce Water Consumption*, Request LLC, Ph.D. Dissertation, The Pennsylvania State University.
 - [29] T. Shimazaki and K. Takenaka, "Evaluation of Intervention Reach on a Citywide Health Behavior Change Campaign: Cross-Sectional Study Results," *Health Education & Behavior*, vol. 42, 2015.
 - [30] E. Seimetz et al., "Effects of an Awareness Raising Campaign on Intention and Behavioural Determinants for Handwashing," *Health Education Research*, vol. 31, no. 2, 2016.
 - [31] Kotler, *Marketing Management, International Edition*, Prentice Hall, Inc., U.S.A., 2003.
 - [32] L. L. Miller, "Measuring the Efficacy of an Energy and Environmental Awareness Campaign to Effectively Reduce Water Consumption," Request LLC, Ph.D. Dissertation, The Pennsylvania State University, 2010.
-