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Awareness of the government-introduced universal pension schemes among the adult population in Bangladesh: A nationwide cross-sectional survey

Sharmin Rima^a, Md. Mahir Faysal^a, Abdullah Al Mamun^b, Khadija Akter Sonia^c,
Hossna Tasmia Monia^a, Anika Tahseen Nuva^a, Ahabab Mohammad Fazle Rabbi^a,
Abdullah-Al Mamun^d, Mohammad Bellal Hossain^{a,*} 

^a Department of Population Sciences, Third Floor, Arts Faculty Building, University of Dhaka, Dhaka, Bangladesh

^b Department of Social Relations, East West University, Dhaka, Bangladesh

^c BRAC Institute of Governance and Development, Dhaka, Bangladesh

^d Department of Japanese Studies, University of Dhaka, Bangladesh

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ABSTRACT

The Universal Pension Scheme (UPS) was launched in Bangladesh in August 2023 to enhance economic security for the aging population. Despite extensive government promotion, the participation rate remains low, underscoring the critical role of public awareness. Awareness is essential for engagement in any voluntary program and directly impacts its success and sustainability. Therefore, the study aimed to investigate awareness of the UPS and its correlates among the Bangladeshi population. The study's sample size was 1624, and the respondents were from the 18–50 age group from seven administrative divisions in Bangladesh, utilizing a cross-sectional quantitative study design. Age-weighted adjustments were applied to make the study sample representative of the national population in terms of age. Results showed that 47.6 % of respondents were aware of UPS. Awareness significantly varied by respondents' age, education, gender, religion, household income, place of residence, and administrative divisions. Multivariable binary logistic regression revealed that respondents aged 46–50 (aOR = 1.911; 95 %CI = 1.155, 3.164), men (aOR = 1.889; 95 %CI = 1.502, 2.376), individuals with Master's and higher education (aOR = 11.909; 95 %CI = 7.599, 18.664), and respondents from 30001 to 40000 BDT income group (aOR = 2.037; 95 %CI = 1.218, 3.406) had significantly higher odds of awareness. Compared to Dhaka, awareness was lower in Chattogram (aOR = 0.678; 95 %CI = 0.467, 0.984) and Rajshahi (aOR = 0.617; 95 %CI = 0.428, 0.889), but higher in Mymensingh (aOR = 2.251; 95 %CI = 1.390, 3.644), and Khulna (aOR = 2.043; 95 %CI = 1.384, 3.013). These findings highlight the need for targeted promotional strategies, including community outreach programs, social gatherings, diverse advertising platforms, and mobile service delivery, to effectively reach youth, individuals with lower education and income levels, and various geographical areas.

1. Introduction

Universal pension programs have received global acceptance in developed and developing nations because of their potential to ensure social welfare and enhance economic stability for the growing older populations (Joust & Rattenhuber, 2018; Khai et al., 2024). In light of the substantial importance of pension programs, institutions such as the World Bank advocate for advancing contributory schemes for their global reach (Palacios & Jain, 2023). Following the worldwide pattern, the Government of Bangladesh (GoB) introduced its first

contribution-based Universal Pension Scheme (UPS) on 17 August 2023, aiming to address the economic security concerns of the country's rising older population. It is a voluntary contributing pension program for people in the private and informal sectors who are between 18 and 50 years old. Individuals over 50 will also be given special consideration for participation in UPS. The scheme consists of four separate pension plans for extending financial security to a broad spectrum of beneficiaries: 'Progoti' - means 'Progress' (for private-sector employees and business owners), 'Surakkha' - means 'Safety' (for informal sector workers and self-employed individuals), 'Samata' - means 'Equality' (for low-income

* Corresponding author.

E-mail address: bellal@du.ac.bd (M.B. Hossain).

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individuals who have yearly income within 60 thousand Bangladeshi Taka), and 'Probash'- means 'Immigrant' (for Bangladeshi expatriates) (National Pension Authority, 2023).

The GoB has implemented various activities and outreach programs to promote UPS nationwide, such as developing an official website, advertising campaigns in national media, distributing pamphlets, engaging local and national-level government officials for community outreach, organizing seminars targeting Bangladeshi expatriates living abroad and engaging ambassadors in dialogue sessions regarding UPS (National Pension Authority, 2023). The GoB initiatives show a genuine commitment to supporting UPS and raising public awareness of its benefits. However, despite these efforts, the response rate to UPS remains low (0.37 %), with only 372,387 customers enrolled in four schemes as of 14 October 2024 (National Pension Authority, 2024), where the initial target of UPS has been set to bring 100 million citizens of Bangladesh which is 60 % of the total population (National Pension Authority, 2023). The lukewarm response rate might be attributed to the potential gap in GoB-initiated promotional programs that aim to reach the masses and create awareness about UPS.

Studies conducted across the globe have consistently highlighted that public awareness and knowledge are pivotal to accepting and successfully implementing pension and social safety schemes (Devi et al., 2021; Sachdev et al., 2022; Thovoethin & Ewalefoh, 2018). A lack of awareness often results in low participation and engagement with such initiatives, undermining their intended impact. The UPS in Bangladesh is a relatively new initiative, and there have only been two studies on UPS in Bangladesh. One study reported that 10.4 % of respondents were unaware of UPS and education, and household income plays a significant role in UPS adoption in Bangladesh (Basak et al., 2024). Another study found that 21.78 % of respondents did not know about UPS and also found less eagerness among the general people of Bangladesh to participate in it (Faieque et al., 2024). However, these studies have several limitations, such as small sample size, limited socio-economic variables, such as age and income, and small geographical coverage to show UPS adoption differentials, and a lack of statistical robustness (Basak et al., 2024; Faieque et al., 2024). To our knowledge, no comprehensive study has assessed the prevalence and correlates of UPS awareness among prospective UPS users in Bangladesh.

Addressing this knowledge gap is critical to understanding the public perception and ensuring the scheme's effectiveness and acceptance. Nevertheless, assessing this public awareness of UPS and its associated socio-demographic factors can offer crucial insights into strengthening the government's strategies to ensure better participation in the schemes. Moreover, the study's findings can provide valuable lessons for other low- and middle-income countries where informal employment is prominent and trust in government-led institutions is limited. Therefore, the present study aims to identify the prevalence of UPS awareness and to determine the individual, family, and community-level correlates of UPS awareness among the adult population in Bangladesh.

1.1. Literature review: factors affecting awareness of UPS

This study uses the Socio-Ecological Model (SEM) to comprehend the various factors impacting awareness of UPS. The SEM, which was first proposed by Urie Bronfenbrenner in 1977 (Bronfenbrenner, 1977) and modified for use in public health studies by McLeroy et al. (1988), asserts that a complex interaction of influences at the individual, interpersonal (family), community, and societal levels shapes human behavior. Because pension scheme awareness is a behavior firmly ingrained in larger social, familial, and institutional settings rather than being the exclusive product of individual traits, this approach is especially pertinent to the analysis of pension scheme awareness. Our study recognizes that pension plan awareness and acceptance are the result of a multi-level dynamic by using the SEM. This model goes beyond an individualistic view of behavior. It enables a more thorough examination of how individual traits, familial influences, community contexts,

and larger societal factors influence how people use social protection programs like the Universal Pension Scheme.

We conceptualized individual, family-level, and community-level factors influencing pension awareness or motivation to enroll in pension schemes following SEM. At the individual level, age, sex, education, income, and religion are crucial for determining the awareness of pension schemes. Age as an individual-level factor plays a fundamental role, with older individuals generally demonstrating higher levels of awareness due to their proximity to retirement and increased focus on financial security. Younger people, on the other hand, often exhibit lower awareness levels, as they are less likely to prioritize long-term financial planning early in their careers (Segbenya et al., 2024). Gender disparities compound awareness gaps, with women, particularly those in rural areas, showing significantly lower levels of awareness about pension schemes compared to men. This disparity is often attributed to limited financial literacy, reduced access to media, and restricted decision-making autonomy within households, which hinder women's engagement with social safety programs (Biswas & Gupta, 2021; Knox-Vydmannov et al., 2017). Education is another important determinant at the individual level, with higher educational attainment tending to have better financial literacy and a greater understanding of the benefits associated with pension schemes (Bhushan & Medury, 2013; Elinder et al., 2022). Similarly, income influences pension awareness, with higher-income individuals generally exhibiting greater awareness levels due to better access to financial resources and information (Biswas & Gupta, 2021; Singh et al., 2015). Religious belief is another factor that also impacts pension awareness. In Muslim-majority countries, for instance, the perception of interest-based financial systems discourages participation, creating an additional barrier to engagement with pension programs (Miti et al., 2020; Thovoethin & Ewalefoh, 2018).

At the family level, household income, type of family (nuclear and joint), household decision maker (men and women), and number of earning members are the most contributing factors to awareness of pension schemes. Studies found that household income contributes to engaging with pension schemes (Biswas & Gupta, 2021; Singh et al., 2015). The members with the highest household income are more likely to be interested in social safety or pension schemes. In contrast, members from lower-income households often struggle with financial literacy and face challenges accessing information about social safety programs (Biswas & Gupta, 2021; Singh et al., 2015). Studies also found that nuclear families foster financial independence, while joint families offer financial and emotional security to elderly members, reducing the need for independent retirement savings (Segbenya et al., 2024; Singhal & Purohit, 2025). Besides, working women in nuclear families held more influence as household decision-makers than those in joint families (Khare, 2022).

Community-level factors, including place of residence and geographic location, also significantly shape awareness of pension schemes. Urban residents generally benefit from better access to media, infrastructure, and public awareness campaigns, which contribute to higher levels of pension knowledge. Conversely, rural populations often face barriers such as limited access to media and infrastructural constraints, resulting in lower levels of awareness (Mohapatra & Mahapatra, 2019). In the context of Bangladesh, pronounced geographic disparities persist across divisions in terms of socio-economic development, media penetration, and internet accessibility (Bangladesh Bureau of Statistics, 2023b), which collectively influence the extent of awareness of UPS. These regional variations highlight the need for targeted outreach strategies considering different areas' unique socio-economic and infrastructural contexts (Balamurugan, 2022).

2. Materials and methods

2.1. Study design, study population, and inclusion criteria

Data for this study were extracted from a survey to explore

knowledge, attitude, and willingness to accept the universal pension scheme in Bangladesh. This quantitative survey adopted a cross-sectional research design and was conducted among Bangladeshi citizens aged 18–50 who are not working in government, semi-government, or autonomous organizations. These inclusion criteria were selected as the government of Bangladesh aimed to include all citizens aged 18 to 50 who are not working in government, semi-government, or autonomous organizations based on their national identity card, including those residing abroad, in this newly introduced pension scheme.

2.2. Sample size and modes of data collection

UPS has four different schemes. Thus, the sample size was calculated for each scheme separately. For each scheme, the sample size was calculated using the following formula: $\frac{Z^2 pq}{d^2} \times NR$; where the Z score for the 95 % confidence interval was 1.96, the values for p and q were 0.5, and the non-response rate was 10 %. The estimated sample size for each pension scheme was 422, resulting in a total sample size of 1688.

The data were collected through face-to-face interviews from December 26, 2023, to January 6, 2024, from seven administrative divisions of Bangladesh (Dhaka, Chattogram, Rajshahi, Rangpur, Mymensingh, Khulna, and Sylhet). Samples were distributed considering the ratio of men to women and the urban-rural population ratio of the divisions in Bangladesh (excluding one division). A structured survey questionnaire was developed in Bangla and was validated after a pretest before the final data collection started. The study used a non-probability convenience sampling technique to reach respondents, as a complete list of adults was unavailable. The data collection team comprised graduate and postgraduate students from the University of Dhaka. The data collectors were provided with rigorous training on the data collection tool and the Kobo Toolbox before going to the field. The data quality was checked daily as the Kobo Toolbox allowed real-time process monitoring.

Data were collected from 1688 respondents. However, 32 respondents were excluded as they were government employees. Another 32 respondents were excluded due to the age inclusion criteria, as the age limit was fixed from 18 to 50 by the GoB for enrollment in UPS; the excluded individuals were above 50. So, the final sample size for this study was 1624. To address the biases of the sampling procedure, we applied a weight adjustment technique to make our study sample representative of the national population in terms of age. The following formula was used to weight the data for analysis: $w_i = \frac{p_i}{s_i}$, where w_i is the weight-adjusted factor, p_i is the relative proportion of population characteristics, and s_i is the proportion of sample characteristics. The relative proportion of the population was followed according to the Bangladesh Population and Housing Census 2022 (Bangladesh Bureau of Statistics, 2023b).

2.3. Measures

2.3.1. Outcome variable: awareness of the universal pension scheme

The outcome variable of the study was the respondents' awareness of the universal pension scheme. The respondents were questioned about their awareness of UPS by asking, 'Have you ever heard about the universal pension scheme?' The response option for his question was binary- 'Yes' or 'No.'

2.3.2. Explanatory variables

The study included the following individual-level socio-demographic variables as explanatory variables: age (18–20, 21–25, 26–30, 31–35, 36–40, 41–45, and 46–50 years old), sex (men and women), religion (Muslim and non-Muslim), education (up to primary level, secondary, higher secondary and diploma, completed undergraduate degree, and postgraduate), marital status (married and unmarried and others), recipients of safety net programs such as old age allowance, widow

allowance, allowance for destitute population etc. (yes and no), have any other insurance accounts (yes and no).

At the family level, the type of family (nuclear and joint), the household decision maker (men and women), the number of earning members in family (1, 2, and 3 or more), and the household income (up to 10000, 10001 to 20000, 20001–30000, 30001–40000, 40001–50000 and more than 50000 Bangladeshi Taka—BDT) were considered explanatory variables.

We considered the following community-level variables as explanatory variables: place of residence (rural and urban) and administrative divisions (Dhaka, Chattogram, Rajshahi, Rangpur, Mymensingh, Khulna, and Sylhet).

2.4. Statistical analysis

The weighted sample was used for statistical analysis. The univariate descriptive statistical analysis was utilized to summarize the distributions of the outcome variable and explanatory variables, using percentage, mean, and standard deviation (SD). Then, the bivariate association was examined using the chi-squared statistic. The significant variables at the bivariate level analysis were used to develop a multi-level model using multivariable binary logistic regression analysis, which helped examine the correlates regarding the awareness of the universal pension scheme. The data were analyzed using the Statistical Product and Service Solutions (SPSS) software, version 26.

3. Results

3.1. Background characteristics and the factors related to awareness of UPS among the respondents

The background characteristics are summarized in Table 1. The mean age of the respondents was 31.9 years (SD = 9.2), and 18.9 % of the respondents belonged to the 21–25 age group; 17.7 % were from the 26–30 age group. About 43 % of the respondents were women, and the majority (90.8 %) were Muslims. About 65.4 % of the respondents were married, while 26.1 % had completed an undergraduate degree. Most respondents (94.7 %) were not recipients of any social safety net programs; 85.4 % had no insurance accounts. On the other hand, 72.1 % of the respondents were from nuclear families, and only 8.4 % had women household decision-makers in their families. About 27.5 % of the respondents belonged to the 20001–30000 BDT income group, and 17.8 % were from the 50000 BDT and above income group. More than half of the respondents (55.3 %) resided in rural areas, and the majority (43.4 %) were from the Dhaka division.

Table 2 presents the factors associated with the awareness of UPS, and it shows that 47.6 % of the study respondents knew about UPS. The awareness about UPS demonstrated a significant association with the respondent's age, sex, religion, education, insurance account, number of earning members in the family, household income, place of residence, and division at the bivariate level. Among the respondents, 48.6 % from the age group 18–20 were aware of UPS, and subsequent age groups demonstrated an increasing trend in awareness about UPS ($p = 0.008$) except for the 21–25 and 26–30 age groups. Women respondents (39.1 %) had lower awareness of UPS compared to men (54.1 %) ($p < 0.001$). Muslim respondents (46.3 %) were less aware of UPS, in contrast to non-Muslim respondents (60.7 %) ($p = 0.001$). The respondents with postgraduate (79.1 %) were more aware of UPS than who completed up to primary education (24.4 %) ($p < 0.001$). Similarly, respondents who had any other insurance accounts (58.2 %) demonstrated higher awareness compared to those without any other insurance accounts (45.7 %) ($p < 0.001$).

Furthermore, respondents living in families with three or more earning members (57.9 %) exhibited higher awareness of UPS compared to who were living in with only one earning family member (43.4 %) ($p < 0.001$). Besides, the percentage of respondents' awareness of UPS

Table 1
Background characteristics of the respondents (n = 1624).

Variables	Unweighted sample n (%)	Weighted sample n (%)
Individual-level variables		
Age		
18–20	146 (9.0 %)	212 (13.1 %)
21–25	331 (20.4 %)	308 (18.9 %)
26–30	298 (18.3 %)	287 (17.7 %)
31–35	227 (14.0 %)	251 (15.5 %)
36–40	224 (13.8 %)	231 (14.2 %)
41–45	211 (13.0 %)	181 (11.1 %)
46–50	187 (11.5 %)	154 (9.5 %)
Mean (SD)	32.7 (9.3)	31.9 (9.2)
Sex		
Women	692 (42.6 %)	699 (43.0 %)
Men	932 (57.4 %)	925 (57.0 %)
Religion		
Muslim	1471 (90.6 %)	1474 (90.8 %)
Non-Muslim	153 (9.4 %)	150 (9.2 %)
Education		
Up to primary	341 (21.0 %)	324 (20.0 %)
Secondary	351 (21.6 %)	355 (21.9 %)
Higher secondary and diploma	259 (15.9 %)	267 (16.4 %)
Completed undergraduate degree	411 (25.3 %)	424 (26.1 %)
Postgraduate	262 (16.1 %)	254 (15.6 %)
Marital status		
Married	1096 (67.5 %)	1062 (65.4 %)
Unmarried and others	528 (32.5 %)	562 (34.6 %)
Recipient of any safety net programs		
No	1536 (94.5 %)	1537 (94.7 %)
Yes	88 (5.4 %)	87 (5.3 %)
Have any other insurance accounts		
No	1380 (85.0 %)	1387 (85.4 %)
Yes	244 (15.0 %)	237 (14.6 %)
Family-level variables		
Family type		
Nuclear	1167 (71.9 %)	1171 (72.1 %)
Joint	457 (28.1 %)	453 (27.9 %)
Household decision maker		
Men	1489 (91.7 %)	1487 (91.6 %)
Women	135 (8.3 %)	137 (8.4 %)
Number of earning members in the family		
1	827 (50.9 %)	823 (50.7 %)
2	563 (34.7 %)	561 (34.5 %)
3 or more	234 (14.4 %)	240 (14.8 %)
Household income (BDT)		
Up to 10000	217 (13.4 %)	214 (13.2 %)
10001–20000	399 (24.6 %)	399 (24.6 %)
20001–30000	447 (27.5 %)	447 (27.5 %)
30001–40000	141 (8.7 %)	142 (8.7 %)
40001–50000	134 (8.3 %)	134 (8.3 %)
More than 50000	286 (17.6 %)	288 (17.8 %)
Community-level variables		
Place of residence		
Rural	898 (55.3 %)	897 (55.3 %)
Urban	726 (44.7 %)	727 (44.7 %)
Division		
Dhaka	699 (42.3 %)	706 (43.4 %)
Chattogram	208 (12.8 %)	210 (12.9 %)
Rajshahi	244 (15.0 %)	243 (15.0 %)
Rangpur	103 (6.3 %)	102 (6.3 %)
Mymensingh	106 (6.5 %)	110 (6.8 %)
Khulna	191 (11.8 %)	182 (11.2 %)
Sylhet	73 (4.5 %)	71 (4.4 %)

(31.3 %) was lowest among those with a household income of up to 10,000 BDT; after that, awareness of UPS increased as household income increased ($p < 0.001$). Respondents from rural areas (41.0 %) were less aware of UPS than the respondents from urban areas (55.7 %) ($p < 0.001$). In terms of division, Fig. 1 shows that the respondents from Rajshahi (34.2 %) had the lowest awareness about the UPS while Mymensingh (60.6 %) had the highest awareness about the UPS in Bangladesh.

Table 2
Factors associated with awareness of UPS using the Chi-square test (n = 1624).

Variables	Ever heard of UPS		p-value
	Yes	No	
Awareness of UPS	773 (47.6 %)	851 (52.4 %)	
Individual-level variables			
Age			
18-20	103 (48.6 %)	109 (51.4 %)	$p = 0.008$
21-25	120 (38.9 %)	188 (61.1 %)	
26-30	136 (47.4 %)	151 (52.6 %)	
31-35	124 (49.4 %)	127 (50.6 %)	
36-40	110 (47.6 %)	121 (52.4 %)	
41-45	91 (50.3 %)	90 (49.7 %)	
46-50	90 (58.4 %)	64 (41.6 %)	
Sex			
Women	273 (39.1 %)	426 (60.9 %)	$p < 0.001$
Men	500 (54.1 %)	425 (45.9 %)	
Religion			
Muslim	682 (46.3 %)	792 (53.7 %)	$p = 0.001$
Non-Muslim	91 (60.7 %)	59 (39.3 %)	
Education			
Up to primary	79 (24.4 %)	245 (75.6 %)	$p < 0.001$
Secondary	112 (31.5 %)	243 (68.5 %)	
Higher secondary and diploma	126 (47.2 %)	141 (52.8 %)	
Completed undergraduate degree	255 (60.1 %)	169 (39.9 %)	
Postgraduate	201 (79.1 %)	53 (20.9 %)	
Marital status			
Married	489 (46.0 %)	573 (54.0 %)	$p = 0.085$
Unmarried and others	284 (50.5 %)	278 (49.5 %)	
Recipient of any safety net programs			
No	737 (48.0 %)	800 (52.0 %)	$p = 0.233$
Yes	36 (41.4 %)	51 (58.6 %)	
Have any other insurance accounts			
No	634 (45.7 %)	753 (54.3 %)	$p < 0.001$
Yes	138 (58.2 %)	99 (41.8 %)	
Family-level variables			
Family type			
Nuclear	562 (48.0 %)	609 (52.0 %)	$p = 0.609$
Joint	211 (46.6 %)	242 (53.4 %)	
Household decision maker			
Men	701 (47.1 %)	786 (52.9 %)	$p = 0.225$
Women	72 (52.6 %)	65 (47.4 %)	
Number of earning members in the family			
			$p < 0.001$

(continued on next page)

Table 2 (continued)

Variables	Ever heard of UPS		p-value
	Yes	No	
Awareness of UPS	773 (47.6 %)	851 (52.4 %)	
1	358 (43.5 %)	465 (56.5 %)	
2	276 (49.2 %)	285 (50.8 %)	
3 or more	139 (57.9 %)	101 (42.1 %)	
Household income (BDT)			$p < 0.001$
Up to 10000	67 (31.3 %)	147 (68.7 %)	
10001-20000	155 (38.8 %)	244 (61.2 %)	
20001-30000	201 (45 %)	246 (55.0 %)	
30001-40000	89 (62.7 %)	53 (37.3 %)	
40001-50000	81 (60.0 %)	53 (40.0 %)	
More than 50000	180 (62.5 %)	108 (37.5 %)	
Community-level variables			
Place of residence			$p < 0.001$
Rural	368 (41.0 %)	529 (59.0 %)	
Urban	405 (55.7 %)	322 (44.3 %)	

3.2. Correlates of awareness of UPS

Table 3 displays the results of a multi-level model using multivariable binary logistic regression. The multi-level model was produced: model 1 contained only individual-level variables, model 2 included family- and individual-level variables, and the final model included community-level variables and all the previous models' variables. Variance Inflation Factor (VIF) and tolerance values were checked to assess multicollinearity among the independent variables, and no serious multicollinearity was detected. Furthermore, better model fitting was indicated by the final model's Cox & Snell and Nagelkerke R-squares, which were 0.215 and 0.287, respectively.

According to the final model (Model 3), respondents in the 46–50 age range were more likely to be aware of UPS than those in the 18–20 age range (aOR = 1.911; 95 %CI = 1.155, 3.164), which was statistically significant. Men were more likely to be aware of UPS than women (aOR = 1.889; 95 %CI = 1.502, 2.376). Furthermore, individuals with postgraduate education level (aOR = 11.909; 95 %CI = 7.599, 18.664) and those who completed an undergraduate degree (aOR = 6.187; 95 %CI =

4.156, 9.211) demonstrated increased odds of being aware of UPS compared to the respondents who completed up to primary education. Respondents who had any other insurance accounts had higher odds of being aware in the first two models, but this lost significance in the final model. Besides, the respondents who belonged to income group BDT 30001–40000 were more likely to be aware (aOR = 2.037; 95 %CI = 1.218, 3.406) than the Up to 10000 BDT group. Finally, in terms of division, respondents from Chattogram (aOR = 0.678; 95 %CI = 0.47, 0.98), Rajshahi (aOR = 0.617; 95 %CI = 0.43, 0.89) had lower odds of awareness and Mymensingh (aOR = 2.251; 95 %CI = 1.39, 3.64), and Khulna (aOR = 2.043; 95 %CI = 1.38, 3.01) had higher odds of awareness compared to the Dhaka division, which was statistically significant.

4. Discussion

This study used data from a cross-sectional survey to examine the Universal Pension Scheme's awareness among Bangladesh's citizens. The findings reveal that 47.6 % of the study respondents knew about the scheme. While national-level evidence on UPS awareness remains limited, a few existing studies have reported related findings in their investigations. For example, Basak et al. (2024) noted that a small proportion of their respondents (10.4 %) were unaware of the scheme, whereas Faeique et al. (2024) reported a considerably higher awareness rate of 78.2 %. These variations may be attributed to the differences in study design, sample composition, or the geographic areas covered in these studies. In addition to measuring the awareness levels, this study explored how individual, household, and community-level characteristics are associated with UPS awareness. The analysis identified significant associations with respondents' age, sex, education level, and their enrollment in an insurance scheme. Furthermore, the number of members earning and the overall household income were relevant at the family level. At the same time, regional variations also played a significant role in shaping the awareness of the respondents.

The findings indicate that age was significantly associated with the awareness of UPS, with notable differences observed between younger and older age groups. Specifically, individuals aged 21–25 were less likely to be aware of the scheme than those aged 18–20. On the other hand, respondents aged 46–50 showed a higher likelihood of awareness. This pattern may initially appear counterintuitive, as previous literature generally suggests that older adults tend to be more literate about pension schemes (Skog, 2006). The higher level of awareness among individuals nearing age 50 may be attributed to a growing interest in retirement-related financial products, driven by increasing concerns about future income security as their earning capacity begins to decline (World Bank, 2024). In contrast, the comparatively lower awareness among slightly older youth may be shaped by multiple factors. In

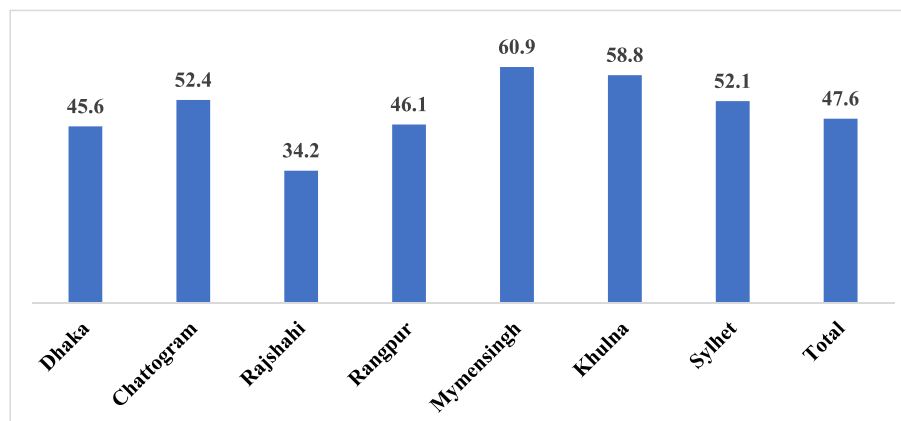


Fig. 1. Percentage of respondents aware of UPS by administrative divisions in Bangladesh.

Table 3
Correlates of awareness of UPS among the respondents using multivariable binary logistic regression (n = 1624).

Variables	Model 1 aOR (95 % CI)	Model 2 aOR (95 % CI)	Model 3 aOR (95 % CI)
Individual-level variables			
Age (in years)			
18–20	(ref)	(ref)	(ref)
21–25	0.600** (0.411, 0.875)	0.623* (0.425, 0.911)	0.579*** (0.391, 0.858)
26–30	0.962 (0.645, 1.435)	0.990 (0.661, 1.482)	0.966 (0.638, 1.463)
31–35	1.080 (0.708, 1.648)	1.127 (0.735, 1.728)	1.175 (0.756, 1.827)
36–40	1.017 (0.662, 1.561)	1.058 (0.684, 1.636)	1.077 (0.687, 1.688)
41–45	1.340 (0.843, 2.131)	1.404 (0.877, 2.247)	1.443 (0.893, 2.333)
46–50	1.863* (1.150, 3.020)	1.920** (1.180, 3.123)	1.911* (1.155, 3.164)
Sex			
Women	(ref)	(ref)	(ref)
Men	1.958*** (1.569, 2.442)	1.957*** (1.564, 2.449)	1.889*** (1.502, 2.376)
Education			
Up to Primary	(ref)	(ref)	(ref)
Secondary	1.624** (1.141, 2.313)	1.552* (1.082, 2.225)	1.520* (1.048, 2.205)
Higher secondary and diploma	3.485*** (2.390, 5.080)	3.163*** (2.141, 4.672)	3.112*** (2.083, 4.649)
Completed undergraduate degree	6.472*** (4.520, 9.267)	5.852*** (3.990, 8.584)	6.187*** (4.156, 9.211)
Postgraduate	12.053*** (8.009, 18.140)	10.894*** (7.054, 16.824)	11.909*** (7.599, 18.664)
Religion			
Muslim	(ref)	(ref)	(ref)
Non-Muslim	1.491* (1.013, 2.196)	1.491* (1.009, 2.203)	1.318 (0.881, 1.970)
Have any other insurance accounts			
No	(ref)	(ref)	(ref)
Yes	1.656* (1.21, 2.28)	1.594** (1.16, 2.19)	1.406 (0.99, 1.98)
Family-level variables			
Number of earning members in the family			
1	(ref)	(ref)	(ref)
2		1.010 (0.785, 1.300)	0.986 (0.764, 1.274)
3 or more		1.448* (1.025, 2.046)	1.454* (1.019, 2.076)
Household income (BDT)			
Up to 10000	(ref)	(ref)	(ref)
10001 to 20000		1.073 (0.734, 1.569)	1.065 (0.719, 1.577)
20001–30000		1.166 (0.797, 1.706)	1.118 (0.751, 1.666)
30001–40000		1.805* (1.095, 2.975)	2.037** (1.218, 3.406)
40001–50000		1.450 (0.873, 2.408)	1.522 (0.904, 2.562)
50001 and more		1.136 (0.721, 1.790)	1.270 (0.785, 2.053)
Community-level variables			
Place of residence			
Rural			(ref)
Urban			1.210 (0.942, 1.554)
Division			
Dhaka			(ref)
Chattogram			0.678* (0.47, 0.98)
Rajshahi			0.617** (0.43, 0.89)
Rangpur			1.360 (0.83, 2.22)
Mymensingh			2.251*** (1.39, 3.64)

Table 3 (continued)

Variables	Model 1 aOR (95 % CI)	Model 2 aOR (95 % CI)	Model 3 aOR (95 % CI)
Khulna			2.043*** (1.38, 3.01)
Sylhet			1.636 (0.930, 2.88)
Model Summary			
–2 Log likelihood	1920.038	1905.128	1854.597
Cox & Snell R Square	0.183	0.190	0.215
Nagelkerke R Square	0.244	0.254	0.287

Note: significance level * = p < 0.05; ** = p < 0.01; *** = p < 0.001.

Bangladesh, many individuals in their early twenties are likely not to be integrated into stable employment (Bangladesh Bureau of Statistics, 2023a), and as a result, may lack the financial stability needed to engage with or consider long-term savings or retirement planning. This disengagement is further reinforced by broader trends of low financial literacy and limited exposure to structured financial education among young adults (de Bassa Scheresberg, 2013; Mitchell et al., 2009).

This study shows a significant association between respondents' sex and the awareness of UPS, with men being more likely to be informed about the scheme than women. This gender disparity is consistent with existing literature from developing countries (Angelici et al., 2022), highlighting structural barriers that limit women's access to financial information and services (Dexter, 2014). Men's greater awareness may stem from their broader participation in labor markets (Mahmud & Bidisha, 2018) and frequent use of financial services (Bangladesh Bank, 2023). Conversely, women in traditional or rural settings may face social and cultural constraints restricting their exposure to public information campaigns or financial services (Pitcaithly et al., 2016). Furthermore, in the context of Bangladesh, gendered divisions of labor (Buchmann, Meyer, & Sullivan, 2024), women's low financial literacy (Asian Development Bank, 2022), and unequal access to news resources (Chowdhury et al., 2020) may further exacerbate these informational gaps.

Educational attainment showed a clear and vigorous relationship with awareness. Individuals with secondary, higher secondary, graduate, and postgraduate education were progressively more likely to be aware of the UPS compared to those with primary education or less. This trend is well supported by previous evidence (Njuguna & Otsola, 2011), linking education with financial literacy (Zhou et al., 2023). Moreover, higher educational attainment may be associated with more stable and formal employment (Rahman, 2006), with more prevalent retirement-planning-related discussions. Additionally, educated individuals in Bangladesh are more likely to be digitally connected (M. N. Islam & Inan, 2021), increasing their exposure to schemes like the UPS. This study found that in models 1 and 2, respondents who had any other insurance accounts had significantly higher odds of being aware of the UPS. This finding aligns with the common assumption that engagement with formal financial services enhances broader awareness and interest in savings mechanisms (Bangladesh Bank, 2019). However, this association became statistically non-significant in model 3 after adjusting for community-level factors, particularly the division. This indicates that the observed relationship may be explained by geographic variation, suggesting that regional disparities in information access or service availability may underlie both having any other insurance accounts and UPS awareness. Once regional differences are accounted for, having any other insurance accounts no longer has an independent effect.

Household-level economic characteristics were also found to play a significant role in shaping awareness of the UPS. Individuals living in households with three or more earning members and those from families with moderately higher monthly income, particularly in the BDT 30,001 to 40,000 range, were more likely to be aware of the scheme. Although

direct evidence on the relationship between household composition and financial awareness is limited, this association may be understood through the lens of financial stability. The presence of multiple income earners can play a role in increasing family income (Manlagñit, 2004) and may create a more stable environment for financial planning. This interpretation aligns with evidence suggesting that economic well-being is positively associated with financial inclusion (Adetunji & David-West, 2019) and future-oriented financial behavior, such as savings (Al-Amin, 2020). In addition, having multiple income earners in the family may facilitate greater exposure to diverse social and professional networks (Sun, 2024), where information about public schemes is more likely to circulate.

Regional variation also emerged as a prominent predictor of awareness regarding the UPS. Respondents residing in the Chattogram and Rajshahi divisions were notably less likely to be aware of the scheme than those living in Dhaka, and respondents from Mymensingh and Khulna were more likely to be aware of UPS. This geographic disparity may reflect differences in administrative outreach capacity, the strength of local communication infrastructures, the urbanization level, and the digital divide. Dhaka, the capital city of the country and the most urbanized region, likely benefits from better access to governmental information campaigns driven by higher exposure to digital resources (Sabur, 2019). In contrast, Chattogram, Rajshahi, and Rangpur, which encompass more rural, hard-to-reach, and underserved areas, may suffer from weaker dissemination channels (Ullah, 2017) and inadequate infrastructure (S. Islam & Nabi, 2024), potentially limiting residents' access to reliable information about newly introduced government programs.

5. Strengths and limitations

The study has several notable strengths. For instance, to the best of our knowledge, this is the first nationwide study exploring awareness of UPS among the adult population in Bangladesh. Prior studies on this topic were limited by their narrow geographic focus, small sample size, or usage of only qualitative approaches. By including a large and diverse sample from seven administrative divisions, the study provides representation across age, sex, religion, place of residence, and economic background. Furthermore, it incorporates a wide range of socio-demographic factors at the individual, family, and community levels, enabling a more in-depth exploration of the factors associated with UPS awareness.

However, this study also has some limitations. The reliance on non-probability convenience sampling may have led to selection bias, thereby limiting the generalizability of the findings to the broader population. Despite our efforts to ensure demographic diversity, the study did not achieve an exact proportional representation of all socio-economic groups in the country. Additionally, due to logistical and financial constraints, data could not be collected from the Barisal division, affecting this study's geographic coverage. Causal relationships between variables cannot be inferred as the study was cross-sectional. Finally, the analysis did not include certain potentially influential variables, such as prior exposure to pension-related media campaigns, digital literacy, and trust in government programs, which could lead to omitted variable bias. There's also a further research scope associated with possible omitted variables to assess awareness of UPS in Bangladesh.

6. Conclusion

To address the needs of the aging population and create a long-lasting social security system, the Government of Bangladesh introduced UPS. However, the findings of this study revealed substantial gaps in awareness of the program, particularly among women, younger individuals, those engaged in informal employment, and lower-income groups within the Bangladeshi population. Addressing these disparities

through tailored promotional efforts and simplified enrollment processes is crucial for UPS's success. Given the study's finding that awareness of UPS is significantly lower among rural residents, females, individuals with low education, and informal sector workers, the government should prioritize targeted outreach to these segments. Communication materials should be locally tailored, linguistically appropriate, and culturally sensitive. Local influencers, religious institutions, and door-to-door campaigns can be effective in these settings. Community-based strategies could also effectively bridge these gaps, such as women-centric awareness programs through NGOs and micro-finance institutions, and youth-targeted campaigns in schools and universities. The study highlights that a lack of procedural clarity inhibits awareness of UPS. The government should decentralize the enrollment process by setting up mobile enrollment camps, kiosks at Union Parishad offices, and help desks in post offices or local banks in this regard. Simplified, step-by-step guides should also be provided visually for low-literacy populations. The low level of understanding about the benefits and mechanics of UPS points to a broader gap in financial literacy. To address this systematically, UPS information should be incorporated into existing financial literacy programs, school curricula, and livelihood training. This integration will promote long-term financial planning behavior, especially among young and informal workers, which will also ensure the program's sustainability. Finally, future research should explore the barriers and facilitators to actual enrollment in the UPS, including factors such as trust in the system, accessibility of registration, and financial feasibility, to complement awareness-focused findings and inform more comprehensive policy strategies.

CRedit authorship contribution statement

Sharmin Rima: Writing – review & editing, Writing – original draft, Methodology, Formal analysis, Data curation, Conceptualization. **Md. Mahir Faysal:** Writing – review & editing, Writing – original draft, Methodology, Formal analysis, Data curation, Conceptualization. **Abdullah Al Mamun:** Writing – review & editing, Writing – original draft, Supervision, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Khadija Akter Sonia:** Writing – review & editing, Writing – original draft, Supervision, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Hossna Tasmia Monia:** Writing – review & editing, Writing – original draft, Methodology, Investigation, Formal analysis, Data curation. **Anika Tahseen Nuva:** Writing – review & editing, Writing – original draft, Methodology, Investigation, Data curation. **Ahbab Mohammad Fazle Rabbi:** Writing – review & editing, Writing – original draft, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Abdullah-Al Mamun:** Writing – review & editing, Writing – original draft, Supervision, Methodology, Investigation. **Mohammad Bellal Hossain:** Writing – review & editing, Writing – original draft, Supervision, Project administration, Methodology, Investigation, Data curation, Conceptualization.

Declaration of the use of AI

The manuscript did not use AI-based assistance.

Data availability

Data is openly available at <https://shorturl.at/zqmg1>.

Ethical approval and consent to participate

This research followed the ethical guidelines set forth by the World Medical Association Declaration of Helsinki and the Ethical Review Committee of the Institute of Disaster Management and Vulnerability Studies, University of Dhaka, Bangladesh (ERC (EXT)-29/242024). The respondents participated voluntarily, and no incentives were provided.

The aims, objectives, potential scopes, and implications of this study's findings were communicated to the participants, who then consented.

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Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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