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RESEARCH NOTES

Consumers' characteristics associated with the use of mail pharmacy services in the United States: Findings from the 2015 National Consumer Survey on the Medication Experience

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ABSTRACT

Objectives: The purpose of this study was to describe current users of mail pharmacy services and to evaluate factors associated with the use of mail pharmacy services.

Design: Cross-sectional online survey-based study.

Setting and participants: The data were obtained from the 2015 National Consumer Survey on the Medication Experience, which included 26,173 adults from throughout the United States.

Outcome measures: Mail pharmacy utilization was based on participant self-report. Demographic variables included age, education, race, gender, insurance status, distance to nearest pharmacy, number of disease states, and income. Chi-square and *t* test analyses were conducted to assess the factors associated with mail pharmacy use. Multivariable logistic regressions were used to compute the odds ratios (ORs) and 95% confidence intervals for the predictors of mail pharmacy usage.

Results: Overall, 17% of respondents reported the use of mail pharmacy services. Based on chi-square analysis, use of mail pharmacy services was significantly associated with age, education, race, and region. In addition, distance to nearest pharmacy and the report of the presence of certain disease states were significantly associated with mail pharmacy use ($P < 0.001$). Based on the results of logistic regression analysis, there was a significant association of mail pharmacy use by age, having chronic diseases, level of education, distance to nearest pharmacy, and other included variables ($P < 0.05$).

Conclusion: Mail pharmacy service users accounted for 17% of the respondents of this study. Advancing age, presence of chronic diseases, increasing level of education, and increasing distance to the nearest pharmacy were positively associated with the use of mail pharmacies. Further research is needed to better understand patient-specific reasons for choosing mail pharmacies or community pharmacies.

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Prescription medications have been delivered via mail services in the United States for more than a hundred years; however, this service was initially offered through local pharmacies. Overall use of mail pharmacy services remained insignificant until the 1980s.¹ The use of mail pharmacies saw substantial growth after major health plans and pharmacy benefit managers began turning to mail pharmacy services as an alternative to community pharmacies.

Sales of prescription drugs through mail pharmacies had grown from below \$100 million in 1981 to an estimated \$1.5 billion in 1989.² By the year 2000; mail-order medication sales accounted for approximately 10.6% of U.S. prescription medication spending, with over \$13 billion in total sales.³ Growth

continued into the 2000s, reaching 17% of the outpatient drug expenditures in 2009, for a total of \$51.5 billion.⁴

Much of the expansion in the use of mail pharmacies was based primarily on the perception of mail pharmacies' ability to reduce cost and improve convenience, adherence, clinical outcomes, and access.^{1,5-10} As the market for mail pharmacies has transformed, pharmacy benefit managers began to offer in-house mail pharmacies. This, in part, led to increased promotion of offering mail pharmacy services to payers and patients alike. Pharmacy benefit managers' advertisement of the potential cost savings when prescription medications were filled through mail pharmacies led many payers to expand their mail-order programs, although it remains unclear if these programs reduce overall costs.¹¹

The growing use of mail pharmacies continued until recent years, when traditional brick-and-mortar pharmacies expanded efforts to reverse the trend. In 2010, 14.7% of prescriptions were estimated to be filled through mail pharmacies, which declined to 10.4% by 2014.⁴ Research has reported high satisfaction rates among mail pharmacy consumers, but high satisfaction rates are also reported for community pharmacies, with some research suggesting preference with the local community pharmacies.¹²⁻¹⁶

Mail pharmacy services continue to be an alternative to traditional pharmacies; however, the recent reductions in the percentage of prescriptions being filled through such pharmacies suggests the need to better explore factors affecting or associated with the use of mail pharmacy services.

Objective

The purpose of this study was to describe factors associated with the use of mail pharmacy services among adults, based on demographics, health-related characteristics, and other patient-related attributes.

Methods

Study design

A cross-sectional, self-administered, online survey design was used to collect the data as part of the 2015 National Consumer Survey on the Medication Experience and Pharmacists' Role. The survey was implemented with the use of the Dillman Tailored Design method and technical assistance from Qualtrics Panels.¹⁷ Qualtrics Panels contracts with provided participant panels and enrolls participants based on census statistics for geographic location, age, and gender. All communications to potential participants were delivered electronically, limiting participant involvement to those who have access to a computer and have previously agreed to be a member of the contracted participant pools. Participation stratification was included to ensure at least 500 respondents from each of the 50 states.

Study population

The study sample included U.S. residents 18 years of age or more at the time of completion. The data were collected in 2015. The sample included all participants from the original dataset.

Dependent variable

Respondents were asked to report their receipt of any prescription medicines through the mail. The survey asked patients, "Do you receive any prescription medicine through the mail?" with the options of yes or no. There was not a timeframe included in this specific item of the survey, nor were participants asked to quantify the number or percentage of prescriptions that they received through the mail.

Independent variables

Covariates that were identified as demographic characteristics included age, gender, race, distance from the nearest pharmacy, annual household income, region of residence, and education. Age was categorized as "millennials" (18-33 years), "X'ers" (40-64 years), "boomers" (51-69 years) and "pre-1946s" (70 years and older). Race was categorized as two groups: white and nonwhite. Education was categorized as high school or less versus greater than high school. Distance from the nearest pharmacy was measured in miles. Annual household income was categorized into 6 categories. Other covariates that were identified as health-related factors included insurance status, self-reported disease, perceived health status, number of chronic illnesses, and use of over-the-counter (OTC) or herbal medications.

Data analysis

Analyses were conducted with the use of SPSS 22. Descriptive statistics were examined for all variables. Chi-square tests were used to measure the differences in distribution among users and nonusers of mail-order pharmacy regarding demographic and health-related characteristics. *t* test analyses were used to assess the mean differences in age, number of health problems, and distance from the nearest pharmacy between users and nonusers of mail-order pharmacy.

Multivariate logistic regression analysis was used to assess the adjusted relationships between the dependent outcome variable and independent factors. An alpha level of 0.5 and 95% confidence interval were applied to estimate the odds ratio (OR) of the likelihood of association.

Results

The total number of participants in this study was 26,173. A total of 17% of participants reported using mail pharmacy services. The respondents were categorized based on demographics, health-related factors, and other variables.

Demographic characteristics

Table 1 presents the breakdown of respondents regarding selected demographic characteristics and the chi-square test findings of association between these factors and the use of mail pharmacy services. The female participants were the predominant gender in this study (71.2%). There was no statistically significant association between gender and mail pharmacy use. The use of pharmacy mail services increased with age. Completion of higher education was associated with

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