RELATIONSHIP BETWEEN DEMOGRAPHIC FACTORS AND BEHAVIORAL BIASES

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ABSTRACT

The purpose of this paper is to examine the influence of demographic factors (Age, Annual Income, Educational Qualification, and Total earning members in the family) on behavioral biases (Availability bias, Confirmation bias, Conservatism bias, and Loss-aversion bias) of policyholders of life insurance. The influence of demographic factors on behavioral biases is based on the structured questionnaire survey designed to collect responses from 407 respondents residing in Bihar, India using a convenient sampling technique.

The results show that behavioral biases are influenced by demographic factors (Age, Annual Income, Educational Qualification, and Total earning members in the family) as there is a significant difference across the categories of various demographic factors with the respective behavioral biases. The study suggests that behavioral biases affect the decisions of the policyholders, so minimizing these biases is needed in their decision-making process and thus to improve their investment strategies. This study is important for life insurance companies and agents to understand the investment behavior of life insurance policyholders. This study contributes to the limited research done in the area of investment decision-making by investors in life insurance. It contributes to the lacking academe on life insurance.

Keywords: *Behavioral Biases, Decision-making, Demographic Factors, Investment, Life Insurance*

INTRODUCTION

Contemporary developments in the field of financial markets throw light on the difference between traditional finance and behavioral finance. Traditional finance assumes that markets, institutions, and even people behave rationally (Baker and Filbeck, 2013), whereas behavioral finance assumes that people make their judgments based on past events, personal preferences, and beliefs. When they face an uncertain situation, they make their decisions based on inconsistency, irrationality, and incompetence (Kahneman and Tversky, 1982; Barros, 2010; Stracca, 2004). Conceptual developments of behavioral finance are made by combining finance and social psychology to solve various puzzles of the market that cannot be solved without any further understanding of psychological dimensions in the decision-making process. Behavioral finance attempts to infer the behavior of investors in a better way by describing the way and

situation in which psychological errors impacted the decision-making process (Daniel et al. 1998).

Behavioral biases are the psychological errors that occur from illogical reasoning and errors in the processing of investors' beliefs, ideas, or principles that lead to irrational behavior of the investors. The study contributes to the limited research by investigating the behavioral biases and demographic profile of life insurance policyholders. The majority of prior research undertaken in the area of behavioral finance is completed by considering information from the trading records of investors (Barber and Odean, 2001; Chen et al. 2007). Very limited study has been undertaken using primary data. This study is based on primary data using a structured questionnaire as primary data is a better indicator of investor behavior as compared to secondary data (Lin, 2011).

This study has two main objectives: to determine the presence of behavioral biases among life insurance policyholders and to examine the relation of demographic variables with behavioral biases. Various demographic variables have been used in prior research to depict the investor's profile by using primary as well as secondary data. Among the various demographic variables viz., age, annual Income, and educational qualification of investors play an important role in investors' investment decision-making. The present study also added one more demographic variable named Total earning members in the family to see whether there exist differences across the various categories of the total number of earning members in the family for various behavioral biases.

The study comprises six sections viz., section two describes prior research done related to behavioral biases, research questions, hypothesis development, and the gap found in the previous literature. Section three throws light on the research methodology adopted for the study. Section four shows the results of the study and Section five implies the major findings of the study. And at last section six concludes the study by providing the future scope and limitations of the study.

LITERATURE REVIEW

Meaning of Behavioral Biases

Behavioral finance in opposition to the assumption of perfect knowledge rationality of traditional finance emphasizes that in real life, all decisions are taken with the help of mental shortcuts also known as behavioral biases (Kahneman and Tversky, 1982; Barber and Odean, 2001). Behavioral Finance is the study of the psychological behavior of financial practitioners and their subsequent effect on markets (Sewell, 2005). Available literature in the field of research pointed to two reasons for behavioral biases: biases caused by emotions called emotional biases and biases caused because of inaccurate reasoning called cognitive biases (Pompian, 2006; Sahi et al. 2013). The reason behind the occurrence of emotional biases is illogical reasoning due to various instincts or intuitions and cognitive biases occur because of errors in the processing of information, statistical algorithms, or memory (Pompian, 2006). The above discussion proposes the following research question;

RQ 1: *Do behavioral biases affect the investment decisions of life insurance policyholders?*

Various types of behavioral biases influence the decisions of investors, but we have considered four biases in this study, three biases fall under cognitive biases i.e., Availability bias, Confirmation bias, and Conservatism bias, and one bias falls under emotional biases i.e., Loss-aversion bias (Pompian, 2006; Ritika and Kishor, 2020).

Cognitive Biases

Availability Bias: A bias in which investors take the mental shortcut to estimate the probability of an outcome based on how easily and instantly the outcomes come to mind (Pompian, 2012). This bias influences the probability judgments based on the ease with which a person can think of past events or the ease with which people can imagine the occurrence of an event (Kahneman and Tversky, 1973, 2000). The outcomes that can be easily recalled by people are considered to be more likely than the outcomes that are difficult to recall (Javed et al., 2017). This happens because of the availability bias in which people do not analyze all the opportunities available for investment rather than investing in securities of a company that spends so much money on advertisement (Barber and Odean, 2000; Harris and Raviv, 2005).

Confirmation Bias: It is one of the most frustrating, encountered, and yet understandable biases (Nickerson, 1998). Confirmation bias is a people's inclination to search for information that supports their principles or ideas and ignore information contradicting them (Nickerson, 1998; Myers and Dewall, 2015). It is a type of natural phenomenon that refers to people's likelihood to give attention only to those principles that disprove their beliefs (Ritika and Kishor, 2020). There is a lesser number of studies related to this bias in the literature on behavioral finance (Costa et al., 2017). This bias also leads to the illusion of knowledge (Daniel et al., 1998; Barber and Odean, 2001; Jonas et al., 2001).

Conservatism Bias: It is a bias that clings investors to the past information they had about the investment and gives no notice or little notice to the current information leading them to forecast instead of learning new information (Jain and Kesari, 2019). Conservatism leads investors to behave inflexibly grasping new information about which they already had prior information. The investor generally holds on to the prior positive information and neglects the negative information (Pompian, 2006, 2012). Conservatism bias refers to the susceptibility of people to inadequately update their opinions or forecasts after receiving new information (Barberis et al. 1988). This bias leads to underreaction of the bad forecasts by investors and react according to their prior beliefs (Luo, 2012).

Emotional Bias

Loss-aversion Bias: It arises when investors strongly tend to prefer avoiding losses as opposed to getting profits. It leads investors to hold their losses even if the investment has little or no chance of going back (Pompian, 2012). Loss-aversion bias insists investors take necessary measures to avoid losses and also weigh losses more than they weigh profits (Tversky and Kahneman, 1991; Benartzi and Thaler, 1995). It is a result of the feeling of distress and fear (Kahneman et al., 1991; Barberis and Huang, 2001; Ritika and Kishor, 2020).

Previous literature supports that investors' demographic profile is related to their investment behavior (Baker et al., 2018; Baker and Yi, 2016; Lin, 2011). There are different

categories in the same demographic variables and are distinctive from each other. If there is significant differences exist between the demographic attributes and behavioral biases, then it is important to identify among which categories, the differences are significant (Deger and Reis, 2020; Ossareh, Pourjafar, and Kopczewski, 2021; Soni and Desai, 2019). This proposes the following research questions;

> ***RQ 2:*** *Do life insurance policyholders behave differently for behavioral biases based on their demographic attributes?*

Hypothesis Development

Given below are some of the studies that are related to demographic variables and behavioral biases examined in this study with supporting literature:

Age and Behavioral biases: (Deger, and Reis, 2020) in their study examine whether conservatism bias is related to demographic variables including the age of the investors. And they found a significant association. There is a significant influence of age on the loss-aversion bias (Arora and Kumari, 2015; Ossareh, Pourjafar, and Kopczewski, 2021; Sujesh and Dhanya, 2021), whereas (Munyas, 2020; Saivasan and Lokhande, 2022) found no significant difference between age and loss-aversion bias. Ossareh, Pourjafar, and Kopczewski (2021) in their study found significant differences across the categories of age for confirmation bias, and no significant differences were found for availability bias. Sujesh and Dhanya (2021) found no significant difference across the categories of age for confirmation bias. The contradictory result of past studies on the relationship between age and behavioral biases proposes the following hypothesis.

> ***H_o:*** *There is no significant difference(s) across the categories of age in years and behavioral biases.*

Annual Income and Behavioral Biases: Isidore and Christie (2019) in their study examined the relationship between availability, loss-aversion bias, and some other biases with the annual income and found a strong association. Soni and Desai (2019) analyzed the relationship of confirmation bias with the annual income of investors and found no significant difference. Kumar et al. (2018) in their study also examine the association between loss-aversion bias and investors' annual income and found significant differences. The above discussion proposes the following hypothesis.

> ***H_o:*** *There is no significant difference(s) across the categories of the annual income of investors and behavioral biases.*

Educational Qualification: Dhungana et al. (2022) analyzed the association between availability bias and the educational qualification of investors and found significant results whereas (Onsomu et al., 2017) in their study found no significant difference across various educational categories for availability bias. Deger and Reis (2020) in their study examine the relationship between conservatism bias and educational qualification and found no difference.

Munyas (2020) found no significant association between loss-aversion bias and educational qualification. The above discussion proposes the following hypothesis.

> ***H_o:*** *There is no significant difference(s) across the categories of educational qualification of investors and behavioral biases.*

One more demographic variable (total earning members in the family) was added to this study to examine its association with behavioral biases, as the previous study lacks the investigation of the association between total earning members in the family and behavioral biases. This gap proposes the following hypothesis.

> ***H_o:*** *There is no significant difference(s) across the categories of total earning members in the family and the behavioral biases.*

Based on the above literature we can find that the investment behavior of life insurance policyholders has still not been explored minutely. We are trying to bridge the gap found in the above literature by examining the relationship between behavioral biases and the demographic profile of life insurance policyholders. Most of the available pieces of literature are related to behaviorally biased investors investing in investment avenues like stocks, mutual funds, pension funds, etc.

Behavioral biases influencing investment decisions in life insurance policyholders (Measures Adopted)

The study adopted a behavioral biases scale from different reputed academic prior research which has been validated by the researchers. The present study deals with the policyholders of life insurance so, the adopted scale is modified in terms of the policies of life insurance to measure the behavioral biases influencing the investment decisions of life insurance policyholders. There are various behavioral biases influencing investors' investment decisions. The study used four behavioral biases viz., Availability bias, Confirmation bias, Conservatism bias, and Loss-aversion bias.

Behavioral Biases	Adopted Scale
Availability Bias Confirmation Bias Conservatism Bias Loss-aversion Bias	Menkhoff et al., 2006; Raut et al., 2018; Ritika and Kishor, 2020; Shusha and Touny, 2016; Shunmugasundaram and Sinha, 2022

RESEARCH DESIGN

Questionnaire design

This study is quantitative and starts with the formulation of a questionnaire that consists of two sections: The demographic profile of respondents and exhibited behavioral biases. The first part of the section consists of general information related to the demographic profile of policyholders like Age, Annual Income, Educational Qualification, etc. The second part

comprises questions related to the behavior of policyholders while investing in life insurance using a five-point Likert scale ranging from 1 to 5 where, 1=Strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree and 5=Strongly Agree as used in the previous studies for measuring behavioral biases (Pandey and Jessica, 2018). The questionnaire is then judged with the help of respondents who were conveniently selected to assess its clarity and ease of completion. After getting good results in pilot testing, we have moved forward toward the final data collection process.

Sampling and data collection

The target population for the study was life insurance policyholders of Bihar State (India). We have managed the data collection using a convenient sampling technique as it is cost-effective and the availability of data is easy (Van De Vijver & Matsumoto, 2001). There is no direct source from where the data about life insurance policyholders of different companies can be obtained. Therefore, no sampling frame was available for the target population. As the population is unknown, the Cochran formula (Cochran, 1977) is used to determine the sample size given below;

$$n = z^2/\ 4e^2$$
$$n = (1.96)^2/\ 4(0.05)^2$$
$$= 384.16$$

Where, n = sample size
p = the population proportions
e = acceptable sampling error (e = 0.05)
z = z value at reliability level or significance level.
- Reliability level 95% or significance level 0.05;
z = 1.96

Therefore, the sample size for the study is 384. Finally, a total number of 450 questionnaires were distributed and 407 responses were collected from life insurance policyholders to reduce the redundancy and make it bias-free. The response rate was 90.4 percent.

Variable type and statistical tools used

In this study behavioral biases (Availability bias, Confirmation bias, Conservatism bias, and Loss-aversion bias) are the dependent variables and demographic factors (Age, Annual Income, Educational Qualification, and Total earning members in the family) are the independent variables. In previous studies, various statistical methods such as ANOVA, SEM, and Kruskal-Wallis test were used to measure the association between demographic factors and behavioral biases (Baker et al., 2019; Lin, 2011; Mishra & Metilda, 2015; Saivasan & Lokhande, 2022; Sujesh & Dhanya, 2021). The study used descriptive analysis to get information related to the demographic profile of respondents. ANOVA is used to examine differences among the means of two or more groups (Malhotra and Dash, 2022). The study employs the Kruskal-Wallis

test because the test of normality is not passed, with the p-value < 0.05 to assess the difference among the means of two or more groups (Malhotra and Dash, 2022).

ANALYSIS AND INTERPRETATION

Before conducting further statistical tests, two important criteria i.e., reliability and normality test of the data need to be checked. Cronbach's alpha tests are used to determine the internal consistency of the behavioral biases (Availability, Confirmation, Conservatism, and Loss-aversion). The standardized alpha of the behavioral biases Viz., Availability= .883, Confirmation=.866, Conservatism=.866 and Loss-aversion=.797. The mean value or overall reliability of behavioral biases is .900 which falls within the acceptable range of alpha greater than .70 (Sekaran, 2000), thus it assures the reliability of the scale (see Table 1).

Table 1
Reliability Statistics

Behavioral Biases	Cronbach's Alpha (α)	No. of items	Variance
Availability Bias	.883	5	.028
Confirmation Bias	.866	4	.017
Conservatism Bias	.866	5	.009
Loss-aversion Bias	.797	3	.028
Behavioral Biases (Overall)	.900	17	.024

Source: Author Compilation

The normality of the data is checked by the Kolmogorov-Smirnov test as the sample size is less than 1,000 and with p-value <.05. So, the study rejects the test of normality i.e., mean=median=mode. Now, we will proceed with the non-parametric test of One-way ANOVA i.e., the Kruskal-Wallis test (Malhotra and Dash, 2022).

Table 2
Demographic Profile of Respondents

Demographic Factors	Values	Frequency	Percent
Age (in years)	18-25	140	34.4
	26-35	141	34.6
	36-45	65	16.0
	46-55	30	7.4
	Above 55	31	7.6
	Total	**407**	**100.0**
Annual Income (in Rs.)	Below 2.5 lac	170	41.8
	2.5 - 5 lac	121	29.7
	5 - 7.5 lac	58	14.3
	7.5 - 10 lac	38	9.3
	Above 10 lac	20	4.9
	Total	**407**	**100.0**
Educational Qualification	Matriculation	11	2.7
	Intermediate	57	14.0
	Graduate	213	52.3
	Post Graduate	118	29.0
	Doctoral Degree	8	2.0
	Total	**407**	**100.0**
Total earning members in the family	One	149	36.6
	Two	185	45.5
	Three	58	14.3
	More than Three	15	3.7
	Total	**407**	**100.0**

Source: Primary Data

Based on the demographic profile of the sample, most of the sample belongs to the 26-35 years and 18-25 years age group, i.e., 34.6 percent and 34.4 percent in total respectively. Concerning the income of respondents, most of the sample belongs to income group 2.5 lac., and below i.e.,41.8 percent of the sample in total. In terms of educational qualification of respondents, most of the samples are graduates i.e., 52.3 percent in total. It indicates that half of the population of the samples is a Graduate. Concerning the total number of earning members in the family, about 45.5 percent of the sample indicates that there were two earning members in their family.

Behavioral biases among individual investors of life insurance

Determining the behavior of 407 respondents involves taking an average of participants for items of the same construct. Table 2 shows the ranking of behavioral biases among life insurance policyholders. The result of the study shows that the mean of all the biases is greater than 3, which indicates that the respondents are behaviorally biased while investing in life insurance. Conservatism bias ranks 1st whereas availability bias ranks 4th and the result of the study contradicted the previous study done in the past as the mean score of availability bias is lowest among all the other biases (Baker et al., 2019).

Table 3
Ranking of Behavioral Biases

Behavioral Biases	Mean	Rank
Availability Bias	3.2187	4
Confirmation Bias	3.2733	3
Conservatism Bias	3.3995	1
Loss-aversion Bias	3.3833	2

Source: Author Compilation

Demographic Variables and Behavioral Biases

The Kruskal-Wallis test is non-parametric and handy in determining the significance of the mean of differences across categories. The study examines the behavioral bias differences across the various groups of four categorical variables of demographic factors. Kruskal-Wallis 1-way ANOVA (k samples) all pair-wise multiple comparison tests applied to see the results. Only significant results are shown in the study.

Age

The p-value of the Kruskal-Wallis test .960 (>.05) indicates that there is no significant difference(s) across the five categories of age in terms of availability bias. Concerning confirmation bias the p-value of the Kruskal-Wallis test .263 (>.05) indicates that there is no significant difference(s) across the five categories of age.

Fig.1.1
Kruskal-Wallis Test Result for Age

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of AV is the same across categories of Age in Years.	Independent-Samples Kruskal-Wallis Test	.960	Retain the null hypothesis.
2	The distribution of CF is the same across categories of Age in Years.	Independent-Samples Kruskal-Wallis Test	.263	Retain the null hypothesis.
3	The distribution of CS is the same across categories of Age in Years.	Independent-Samples Kruskal-Wallis Test	.049	Reject the null hypothesis.
4	The distribution of LA is the same across categories of Age in Years.	Independent-Samples Kruskal-Wallis Test	.043	Reject the null hypothesis.

The p-value of the Kruskal-Wallis test is .049 (<.05) which indicates a significant difference(s) across the five categories of age for conservatism bias. Further pair-wise comparison results identified that there is a significant difference between the two age groups (46-55 years to 26-35 years) and (18-25 years to 26-35 years) at the 95% confidence level. The detailed view of the pair-wise test shows that the age group of (46-55) yrs. was more conservative than the age group of (26-35) yrs. with h=50.023 and p=.032. The test also revealed that the age group of (18-25) yrs. was less conservative than the age group of (26-35) yrs. with h=-36.620 and p=.008.Concerning loss-aversion bias, the p-value of the Kruskal-Wallis test is .043 (<.05) which indicates a significant difference(s) across the five categories of age. Further pair-wise comparison results identified significant differences across three age groups (36-45 years to 26-35 years), (36-45 years to above 55 years), and (18-25 years to above 55 years) at the 95% confidence level. The detailed view of the pair-wise test shows that the age group of (36-45) yrs. was more by loss aversion bias than (26-35) yrs. and influenced less by loss aversion bias than those (Above 55) yrs. with h=36.260; -62.629 and p=.035;.013 respectively. The test also revealed that the age group of (18-25) was influenced less by loss aversion bias than those (Above 55) yrs. with h=-52.180 and p=.022.

Table 4
Pair-wise Comparison of Age for Conservatism Bias

Sample l - Sample 2	Test Statistic	Std. Error	Std. Test Statistic	Sig.
(46-55)-(18-25)	13.404	23.394	. 573	.567
(46-55)-(36-45)	17.754	25.666	.692	.489
(46-55)-(Above 55)	-33.139	29.780	-1.113	.266
(46-55)-(26-35)	50.023	23.379	2.140	.032
(18-25)-(36-45)	-4.350	17.453	-.249	.803
(18-25)-(Above 55)	-19.735	23.081	-.855	.393
(18-25)-(26-35)	-36.620	13.874	-2.640	.008
(36-45)-(Above 55)	-15.385	25.381	-.606	.544
(36-45)-(26-35)	32.270	17.433	1.851	.064
(Above 55)-(26-35)	16.885	23.066	.732	.464

Each row tests the null hypothesis that the Sample1 and Sample 2 distributions are same.
Asymptotic significances are displayed, the significance level is .05.

Table 5
Pair-wise Comparison of Age for Loss-aversion Bias

Sample l – Sample 2	Test Statistic	Std. Error	Std. Test Statistic	Sig.
(36-45)-(18-25)	10.449	17.263	. 605	.545
(36-45)-(46-55)	-19.155	25.387	-.755	.451
(36-45)-(26-35)	36.260	17.244	2.103	.035
(36-45)-(Above 55)	-62.629	25.105	-2.495	.013
(18-25)-(46-55)	-8.706	23.140	-.367	.707
(18-25)-(26-35)	-25.811	13.723	-1.881	.060
(18-25)-(Above 55)	-52.180	22.831	-2.285	.022
(46-55)-(26-35)	17.105	23.126	.740	.460
(46-55)-(Above 55)	-43.474	29.457	-1.476	.140
(26-35)-(Above 55)	-26.368	22.816	-1.156	.248

Each row tests the null hypothesis that the Sample1 and Sample 2 distributions are same. Asymptotic significances are displayed, the significance level is .05.

Annual Income

The p-value of the Kruskal-Wallis test .126 (>.05) indicates that there is no significant difference(s) across the five categories of annual income in terms of conservatism bias. In terms of loss-aversion bias, the p-value of the Kruskal-Wallis test .747 (>.05) indicates that there is no significant difference(s) across the five categories of annual income.

Fig. 1.2
Kruskal-Wallis Test Result for Annual Income

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of AV is the same across categories of Annual Income.	Independent-Samples Kruskal-Wallis Test	.031	Reject the null hypothesis.
2	The distribution of CF is the same across categories of Annual Income.	Independent-Samples Kruskal-Wallis Test	.007	Reject the null hypothesis.
3	The distribution of CS is the same across categories of Annual Income.	Independent-Samples Kruskal-Wallis Test	.126	Retain the null hypothesis.
4	The distribution of LA is the same across categories of Annual Income.	Independent-Samples Kruskal-Wallis Test	.747	Retain the null hypothesis.

The p-value of the Kruskal-Wallis test is .031 (<.05) which indicates a significant difference(s) across the five categories of annual income for availability bias. Further pair-wise comparison results identified that there is a significant difference between the two groups (5-7.5 lac. to above 10 lac.) and (below 2.5 to above 10 lac.) at the 95% confidence level. The detailed view of the pair-wise test shows that the respondents earning an annual income of (above 10 lac.) were influenced more by availability bias than the respondents earning an annual income of (5-7.5 lac. and below 2.5 lac) with h=-81.853; -71.354 and p=.007; .010 respectively. Concerning Confirmation bias, the p-value of the Kruskal-Wallis test is .007 (<.05) which indicates a significant difference(s) across the five categories of annual income. Further, the pair-wise comparison results identified significant differences across three groups (5-7.5 lac. to 2.5 to 5 lac.), (5-7.5 lac. to above 10 lac.), and (below 2.5 lac. to 2.5-5 lac.) at the 95% confidence level. The detailed view of the pair-wise test shows that the respondents earning an annual income of (5-7.5 lac.) were more by confirmation bias than (2.5-5 lac.) and influenced less by confirmation bias than (above 10 lac.) with h=59.796; -66.574 and p=.001; .027 respectively. The test also revealed that the respondents earning an annual income of (below 2.5 lac.) were influenced less by confirmation bias than (2.5-5 lac.) with h=-35.866 and p=.009.

Table 6
Pair-wise Comparison of Annual Income for Availability Bias

Sample l - Sample 2	Test Statistic	Std. Error	Std. Test Statistic	Sig.
(5-7.5 lac)-(Below 2.5 lac.)	10.498	17.700	.593	.553
(5-7.5 lac.)-(2.5-5 lac.)	30.613	18.589	1.647	.100
(5-7.5 lac.)-(7.5-10 lac.)	-40.907	24.293	-1.684	.092
(5-7.5 lac.)-(Above 10 lac.)	-81.853	30.183	-2.712	.007
(Below 2.5 lac.)-(2.5-5 lac.)	-20.115	13.844	-1.453	.146
(Below 2.5 lac.)-(7.5-10 lac.)	-30.408	20.886	-1.456	.145
(Below 2.5 lac.)-(Above 10 lac.)	-71.354	27.516	-2.593	.010
(2.5-5 lac.)-(7.5-10 lac.)	-10.294	21.645	-.476	.634
(2.5-5 lac.)-(Above 10 lac.)	-51.240	28.096	-1.824	.068
(7.5-10 lac.)-(Above 10 lac.)	-40.946	32.155	-1.273	.203

Each row tests the null hypothesis that the Sample1 and Sample 2 distributions are same. Asymptotic significances are displayed, the significance level is .05.

Table 7
Pair-wise Comparison of Annual Income for Confirmation Bias

Sample I – Sample 2	Test Statistic	Std. Error	Std. Test Statistic	Sig.
(5-7.5 lac)-(Below 2.5 lac.)	23.930	17.656	1.355	.175
(5-7.5 lac.)-(7.5-10 lac.)	-42.093	24.233	1.737	.082
(5-7.5 lac.)-(2.5-5 lac.)	59.796	18.543	3.225	.001
(5-7.5 lac.)-(Above 10 lac.)	-66.574	30.109	-2.211	.027
(Below 2.5 lac.)-(7.5-10 lac.)	-18.163	20.835	-.872	.383
(Below 2.5 lac.)-(2.5-5 lac.)	-35.866	13.810	-2.597	.009
(Below 2.5 lac.)-(Above 10 lac.)	-42.644	27.448	-1.554	.120
(7.5-10 lac.)-(2.5-5 lac.)	17.704	21.592	.820	.412
(7.5-10 lac.)-(Above 10 lac.)	-24.482	32.076	-.763	.445
(2.5-5 lac.)-(Above 10 lac.)	-6.778	28.027	-.242	.809

Each row tests the null hypothesis that the Sample1 and Sample 2 distributions are same.
Asymptotic significances are displayed, the significance level is .05.

Educational Qualification

The p-value of the Kruskal-Wallis test .334 (>.05) indicates that there is no significant difference(s) across the five categories of educational qualification in terms of confirmation bias. In terms of loss-aversion bias, the p-value of the Kruskal-Wallis test .556 (>.05) indicates that there is no significant difference(s) across the five categories of educational qualification.

Fig. 1.3
Kruskal-Wallis Test Result for Educational Qualification

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of AV is the same across categories of Educational Qualification.	Independent-Samples Kruskal-Wallis Test	.013	Reject the null hypothesis.
2	The distribution of CF is the same across categories of Educational Qualification.	Independent-Samples Kruskal-Wallis Test	.334	Retain the null hypothesis.
3	The distribution of CS is the same across categories of Educational Qualification.	Independent-Samples Kruskal-Wallis Test	.017	Reject the null hypothesis.
4	The distribution of LA is the same across categories of Educational Qualification.	Independent-Samples Kruskal-Wallis Test	.556	Retain the null hypothesis.

The p-value of the Kruskal-Wallis test is .013 (<.05) which indicates significant difference(s) across the five categories of educational qualification for availability bias. Further, pair-wise comparison results identified significant differences across four groups (Doctoral Degree to Post Graduate), (Matriculation to Post Graduate), (Intermediate to Post Graduate), and (graduate to postgraduate) at the 95% confidence level. The detailed view of the pair-wise test shows that respondents who were (Post Graduates) were influenced less by availability bias than those (Doctoral Degrees) and (Matriculation) with h=92.553; 85.314 and p=.030; .020 respectively. The test also revealed that the respondents who were (Post Graduates) were influenced more by availability bias than (Intermediate) and (Graduate) with h=-43.388; -28.617 and p=.021; .032 respectively. For conservatism bias, the p-value of the Kruskal-Wallis test is .017 (<.05) which indicates significant difference(s) across the five categories of educational qualification. Further pair-wise comparison results identified significant differences across three groups (Matriculation to Post Graduate), (Intermediate to Graduation), and (Intermediate to Post Graduate) at the 95% confidence level. The detailed view of the pair-wise test shows that respondents who were (Post Graduates) were more conservative than matriculation and intermediate with h=-73.050; -53.886 and p=.046; .004 respectively. The test also revealed that the respondents who were (Intermediate) were less conservative than those (Graduates) with h=-46.398 and p=.007.

Table 8
Pair-wise Comparison of Educational Qualification for Availability Bias

Sample l – Sample 2	Test Statistic	Std. Error	Std. Test Statistic	Sig.
Doctoral Degree-Matriculation	7.239	54.086	.134	.894
Doctoral Degree-Intermediate	49.164	43.946	1.119	.263
Doctoral Degree- Graduate	63.936	41.919	1.525	.127
Doctoral Degree-Post Graduate	92.553	42.525	2.176	.030
Matriculation-Intermediate	-41.926	38.332	-1.094	.274
Matriculation-Graduate	-56.697	35.990	-1.575	.115
Matriculation-Post Graduate	85.314	36.695	2.325	.020
Intermediate-Graduate	-14.772	17.358	-.851	.395
Intermediate-Post Graduate	-43.388	18.775	-2.311	.021
Graduate-Post Graduate	-28.617	13.358	-2.142	.032

Each row tests the null hypothesis that the Sample1 and Sample 2 distributions are same. Asymptotic significances are displayed, the significance level is .05.

Table 9
Pair-wise Comparison of Educational Qualification for Conservatism Bias

Sample l – Sample 2	Test Statistic	Std. Error	Std. Test Statistic	Sig.
Matriculation-Intermediate	-19.164	38.294	-.500	.617
Matriculation-Graduate	-65.562	35.954	-1.824	.068
Matriculation-Post Graduate	-73.050	36.658	-1.993	.046
Matriculation-Doctoral Degree	-76.682	54.031	-1.419	.156
Intermediate-Graduate	-46.398	17.340	-2.676	.007
Intermediate-Post Graduate	-53.886	18.756	-2.873	.004
Intermediate-Doctoral Degree	-57.518	43.902	-1.310	.190
Graduate-Post Graduate	-7.488	13.344	-.561	.575
Graduate-Doctoral Degree	-11.120	41.876	-.266	.791
Post Graduate-Doctoral Degree	-3.631	42.482	-.085	.932

Each row tests the null hypothesis that the Sample1 and Sample 2 distributions are same.
Asymptotic significances are displayed, the significance level is .05.

Total earning members in the family

In terms of availability bias, the p-value of the Kruskal-Wallis test .103 (>.05) indicates no significant difference(s) across four categories to total earning members in the family. The p-value of the Kruskal-Wallis test .053 (> .05) indicates no significant difference(s) across four categories of total earning members in the family in terms of loss-aversion bias.

Fig. 1.4
Kruskal-Wallis Test result for Total earning members in the family

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of AV is the same across categories of Total Earning Members in Family.	Independent-Samples Kruskal-Wallis Test	.103	Retain the null hypothesis.
2	The distribution of CF is the same across categories of Total Earning Members in Family.	Independent-Samples Kruskal-Wallis Test	.000	Reject the null hypothesis.
3	The distribution of CS is the same across categories of Total Earning Members in Family.	Independent-Samples Kruskal-Wallis Test	.000	Reject the null hypothesis.
4	The distribution of LA is the same across categories of Total Earning Members in Family.	Independent-Samples Kruskal-Wallis Test	.053	Retain the null hypothesis.

The p-value of the Kruskal-Wallis test is .000 (<.05) which indicates significant difference(s) across the four categories of the total earning members in the family for confirmation bias. Further pair-wise comparison results identified significant differences across five groups (One to Two), (One to Three), (One to More than Three), (Two to Three), and (Two to More than Three) at the 95% confidence level. The detailed view of the pair-wise test shows that respondents having (One) earning member in the family were influenced less by confirmation bias than respondents having (Two), (Three) and (More than Three) earning members in the family with h=-36.213; -80.912; -115.515 and p=.005; .000; .000 respectively. The test also revealed that the respondents having (Two) earning members in the family were influenced less by confirmation bias than respondents having (Three) and (More than Three) earning members in the family with h=-44.699; -79.302 and p=.011; .011 respectively. For conservatism bias, the p-value of the Kruskal-Wallis test is .000 (<.05) which indicates significant difference(s) across the four categories of total earning members in the family. Further pair-wise comparison results identified significant differences across four groups (One to Two), (One to Three), (One to More than Three), and (Two to More than Three) at the 95% confidence level. The detailed view of the pair-wise test shows that respondents having (One) earning member in the family were less conservative than respondents having (Two), (Three) and (More than Three) earning members in the family with h=-36.809; -63.946; -98.196 and p=.004; .000; .002 respectively. The test also revealed that the respondents having (Two) earning members in the family were less conservative than respondents having (More than Three) earning members in the family with h=-61.387 and p=.049.

Table 10
Pair-wise Comparison of Total Earning Members in the Family for Confirmation Bias

Sample l – Sample 2	Test Statistic	Std. Error	Std. Test Statistic	Sig.
One-Two	-36.213	12.781	-2.833	.005
One-Three	-80.912	17.970	-4.503	.000
One-More than Three	-115.515	31.452	-3.673	.000
Two-Three	-44.699	17.473	-2.558	.011
Two-More than Three	-79.302	31.171	-2.544	.011
Three-More than Three	-34.603	33.634	-1.029	.304

Each row tests the null hypothesis that the Sample1 and Sample 2 distributions are same. Asymptotic significances are displayed, the significance level is .05.

Table 11
Pair-wise Comparison of Total Earning Members in the Family for Conservatism Bias

Sample l – Sample 2	Test Statistic	Std. Error	Std. Test Statistic	Sig.
One-Two	-36.809	12.800	-2.876	.004
One-Three	-63.946	17.996	-3.553	.000
One-More than Three	-98.196	31.498	-3.117	.002
Two-Three	-27.137	17.499	-1.551	.121
Two-More than Three	-61.387	31.217	-1.966	.049
Three-More than Three	-34.251	33.683	-1.017	.309

Each row tests the null hypothesis that the Sample1 and Sample 2 distributions are same. Asymptotic significances are displayed, the significance level is .05.

FINDINGS

The findings of the studies are given below:

Hypotheses	Result
1. A. H_o: No significant difference across the categories of Age and Availability Bias	Accepted
B. H_o: No significant difference across the categories of Age and Confirmation Bias	Accepted
C. H_o: Categories of Age = Conservatism Bias	Rejected
D. H_o: Categories of Age = Loss-aversion Bias	Rejected
2. A. H_o: Categories of Annual Income = Availability Bias	Rejected
B. H_o: Categories of Annual Income = Confirmation Bias	Rejected
C. H_o: Categories of Annual Income = Conservatism Bias	Accepted
D. H_o: Categories of Annual Income = Loss-aversion Bias	Accepted
3. A. H_o: Categories of Educational Qualification = Availability Bias	Rejected
B. H_o: Categories of Educational Qualification = Confirmation Bias	Accepted
C. H_o: Categories of Educational Qualification = Conservatism Bias	Rejected
D. H_o: Categories of Educational Qualification = Loss-aversion Bias	Accepted
4. A. H_o: Categories of Total earning members in family = Availability Bias	Accepted
B. H_o: Categories of Total earning members in family = Confirmation Bias	Rejected
C. H_o: Categories of Total earning members in family = Conservatism Bias	Rejected
D. H_o: Categories of Total earning members in family = Loss-aversion Bias	Accepted

1. The result of the study shows that life insurance policyholders have undergone all the biases and among all four biases Conservatism bias ranks first and Availability bias ranks fourth but the mean score is above 3 in contradiction to the previous study done by (Baker et al., 2019).

2. The result of the study indicated a significant difference across the categories of age for conservatism bias and loss-aversion bias. For conservatism bias, the age group of (46-55)

years policyholders were more conservative than (26-35) years and the age group of 26-35) years was more conservative than the policyholders of (18-25) years. The findings revealed that conservatism bias increases with the increase in age of policyholders and it supports the previous study done by (Deger and Reis, 2020). Concerning the loss aversion bias it was found that the age group of (36-45) years policyholders were more loss-averse than that of (26-35) years, and policyholders belong to above 55 years were more loss-averse than the age group (36-46) years and (18-25) years. The findings support the results of previous studies in terms of loss-aversion bias (Arora and Kumari, 2015; Ossareh, Pourjafar, and Kopczewski, 2021; Sujesh and Dhanya, 2021), whereas contradict the previous study done by (Munyas, 2020; Saivasan and Lokhande, 2022). It was also found that the result of the study shows that there are no significant differences across the categories of age for availability bias and confirmation bias, and the findings contradict the previous study done by (Ossareh, Pourjafar, and Kopczewski; 2021) and support the study for confirmation bias (Sujesh and Dhanya; 2021). Concerning the age of policyholders, we have found significant differences across the categories of age for conservatism bias and loss-aversion bias and also found no significant differences for availability bias and confirmation bias. The psychological aspects behind these findings were the conservative mindset of older adults than the younger ones, the tendency of older adults to invest in risk-free or low-risk avenues, and also less willingness of older adults to change their beliefs or update their investment decisions (Yoon and Gutchess, 2012). Older adults put less effort into information search, updating their knowledge with newly available information, and confirming the same with the existing or new information (Ozanne and Kardes, 2000).

3. The result of the study indicated significant differences across the categories of annual income for availability bias and confirmation bias. For availability bias, policyholders who were earning above ₹ 10 lac. rely on immediately available information for making decisions than those who were earning below ₹ 2.5 lac and between ₹ 5-7.5 lac. The result of the study supports the previous study done by (Isidore, and Christie, 2019). Concerning the confirmation bias, the result of the study revealed that policyholders earning above ₹ 10 lac. favor the information that supports their knowledge while making investment decisions over those who were earning between ₹ 5-7.5 lac. The same patterns have been seen in some other categories of income groups. The findings revealed that higher-earning policyholders always look for information that is consistent with their knowledge to confirm their existing beliefs; the result related to confirmation bias supported the previous study that high-income-earner groups are more affected by confirmation bias (Soni and Desai, 2019). The result of the study agrees with a previous study done by (Kumar et al., 2018) and contrasts with the previous study done by (Isidore and Christie, 2019) in the case of loss-aversion bias. Concerning the annual income of policyholders, we have found significant differences across the categories of annual income for availability bias and confirmation bias and also found no significant differences for conservatism bias and loss-aversion bias. The psychological aspects behind these findings were the easy and early access of information by high-earner adults than those who have low income and can also confirm their knowledge and new information from various financial experts, agents, online platforms, etc. The income of policyholders does make a greater impact on the conservatism and loss-aversion biases

because the psychological aspect influencing conservatism bias and loss-aversion bias in decision-making is the age of the adults (Yoon and Gutchess, 2012).

4. The result of the study indicates that the difference across the categories of educational qualification is significant only for availability and conservatism bias. For availability bias, policyholders having educational qualifications of the doctoral degree and matriculation generally make decisions based on immediately available information than postgraduate policyholders. Further, the results also revealed that postgraduate policyholders make their decisions based on immediately available information than policyholders having educational qualifications of intermediate and graduate. The findings of the study support the previous study done by (Dhungana et al., 2022) and contradict the previous study done by (Onsomu et al., 2017). Concerning the conservatism bias, policyholders who have educational qualifications of postgraduate were more conservative than those who have intermediate and matriculation degrees. It was also found that graduate policyholders were more conservative than those who have intermediate educational qualifications. Highly educated policyholders were more conservative than less educated individuals and the result is contradictory with the previous study done by (Deger and Reis, 2020), who found no significant difference. The study also found that the result of the study agrees with the previous study done by (Munyas, 2020) in the case of loss-aversion bias. Concerning the educational qualification of policyholders, we have found significant differences across the categories of educational qualification for availability bias and conservatism bias and also found no significant differences for confirmation bias and loss-aversion bias. The psychological aspects behind these findings were the readily available information and the eagerness to learn new information every day as a highly educated adult. It can cause highly educated adults to be over-optimistic or over-pessimistic while making investment decisions than the less educated adults leading to availability bias and conservatism bias (Gervais et al., 2003). The educational qualification of policyholders does not play a major role in confirmation bias and loss-aversion bias because policyholders have sufficient knowledge provided by the agents, and they do not want to confirm their knowledge. They also found very a limited amount of risk involved in life insurance, thus educational qualification does not influence the loss-aversion bias**.**

5. One more demographic variable added in the study found significant differences across the categories of total earning members in the family for confirmation bias and conservatism bias and no significant difference across the categories of total earning members in the family was found for availability bias and loss-aversion bias.

CONCLUSION

This study contributes to the limited literature on life insurance academe by assessing the relationship between demographic factors and behavioral biases exhibited by life insurance policyholders while making decisions in life insurance policies. This study was conducted in the context of Indian life insurance policyholders. The study concludes that the association between conservatism bias and loss aversion bias with age is significantly different. Further, we have

found a significant difference across the categories of annual income for availability and confirmation bias. The study also revealed that for availability bias and conservatism bias, the differences across the categories of educational qualifications were found to be significant. Finally, we find significant differences across the categories of total earning members in the family for confirmation bias and conservatism bias. Additionally, the study concluded that, with the increase in age and income of policyholders, the level of bias increases. Future research could use these results and compare them across the world.

In life insurance, policyholders knowingly or unknowingly exhibit biased behavior while making investment decisions. Life insurance policyholders show the same behavior as other investors investing in different avenues such as stocks, mutual funds, pension funds, gold, real estate, and cryptocurrencies. Investors do not always make rational decisions; sometimes, their decisions are based on their own beliefs, intuition, mental shortcuts running behind their minds, etc., which makes their decisions biased. Therefore, further research needs to be undertaken to understand investor behavior in detail. This study helps policyholders make them aware of the biases they have gone through while making investment decisions in life insurance and helps them improve their investment strategies by avoiding those biases. This study used a convenient sampling technique, in which data are collected from the respondents as per the convenience of the researcher not at random, so there are chances of implicit bias by the researchers, and the sample may not cover all income levels, social, educational levels, etc. Future research can be conducted using a probability sampling technique that helps generate results with high confidence. The study used the Kruskal-Wallis test; future research can be undertaken using different statistical methodologies such as regression and the Friedman test.

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APPENDIX

Kindly give your responses for the following statements related to Life Insurance Policy from 1 to 5 where (1- SD- Strongly Disagree, 2- D- Disagree, 3- N- Neutral, 2- A- Agree, 1- SA- Strongly Agree)

STATEMENTS	SD	D	N	A	SA
(A) AVAILABILITY					
1. While considering the track record of my investment in policies I give more preference to its recent benefits					
2. Advertisements are main the source of information for my investment decision in life insurance policies					
3. I ignore previous records before making any investment decision in life insurance					
4. I consider the recent information of the policies before investing in it					
5. The information from my relatives, close friends, and peers is a reliable source for my investment decision in life insurance					
(B) Confirmation					
1. I am not selective in collecting information about the policy purchased by me*					
2. I value positive information more than negative information regarding the purchase decision of life insurance					
3. I value positive information more than negative information about the life insurance company, I trust					
4. I ignore the information that does not match my thoughts regarding my future policy purchase decision					
(C) CONSERVATISM					
1. I react when I know new facts/information about life insurance policies					
2. I don't easily change my policy-related decisions once they made					
3. I stick to old policies because the future is uncertain					
4. I prefer to invest in less risky investment policies					
5. I keep updating my knowledge while investing in life insurance policies*					
(D) Loss Aversion					
1. I avoid taking decisions due to fear of incurring losses					
2. Making a loss of Rs. 1,000 is more painful than the happiness of making a profit of Rs. 1,000					
3. I have a fear of inadequate investment advice from agents and family members.					