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Behavioral Economics and Health Decision-Making: A Study on Preventive Health Behavior in Urban Communities

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Abstract

Preventive health practices play a vital role in reducing the risks of chronic diseases and enhancing population well-being. Despite this, preventive measures such as immunization, regular check-ups, balanced diets, and exercise remain underutilized in metropolitan areas. This study adopts a behavioral economics perspective to examine how cognitive biases shape urban residents' decisions regarding preventive health behaviors. A quantitative survey was conducted among 392 respondents across diverse socioeconomic backgrounds, focusing on present bias, status-quo bias, and bounded rationality. The results revealed significant negative correlations between these biases and preventive health practices. Specifically, present bias strongly predicted delays in medical check-ups, status-quo bias hindered the adoption of healthier routines, and bounded rationality contributed to the misinterpretation of health-related information. Socioeconomic status further moderated these outcomes, with higher-income individuals more likely to engage in preventive measures. The findings underscore the importance of applying behavioral insights such as framing effects, default options, and simplified health communication to improve uptake of preventive practices in urban environments. Policymakers are urged to integrate behavioral nudges with equity-oriented health initiatives to address persistent disparities.

INTRODUCTION

The process of health-related decision-making is more complex than the mere calculations of cost and benefit. In the traditional economic approach, people are assumed to behave in a perfect way and continuously choose the alternatives that give them maximum utility and long-term well-being. However, empirical studies have proved that real-life behaviour often does not follow these principles especially in the field of health (Thaler & Sunstein, 2008; Kahneman, 2011). People constantly make decisions that conflict with their own health goals in the long term, such as avoiding vaccinations, delaying screening, or eating poorer diets even when they know the risks of doing so. These behavioural contradictions demonstrate that preventive health behaviour can not be explained by models that are solely based on

rational choice (Acuff et al., 2024; Ruiz Serrano et al., 2025; Marikyan & Papagiannidis, 2023).

The behavioural economics has come into place as a corrective paradigm and it has integrated psychological perspectives into economic decision-making models (Umapathy, 2024; Ruggeri, 2021; Gomes, 2023). It preempts the effect of cognitive prejudices, heuristics, and social forces that condition behaviour with uncertainty and incomplete information. Some key principles, such as present bias (tendency to focus on immediate gratification against delayed benefits), status-quo bias (disposition to adhere to the established routine), and inherent rationality limit (information processing capacity) allow explaining the reasons why people can neglect preventive health practices in large numbers (Loewenstein et al., 2012; Milkman et al., 2018). Such insights cannot be neglected in the interpretation of health-related decisions particularly, those that make use of preventive measures, the benefits of which span a long period, and costs are short term.

Preventive health behaviour is a very broad practice and includes immunization, regular checkups, cancer screening, balanced diets and physical exercises (Altwaijri et al., 2017). The interventions are central in reducing the burden of non-communicable diseases (NCDs) and preventable deaths. Although their effectiveness is well-established, their adoption is not most uniform (especially in urban areas), where, ironically, the increased access to health care services is not always accompanied by the uniformity of behavioural response. Such a discrepancy raises questions of crucial concern as to why such urban dwellers, who are more educated and better endowed than their rural counterparts, do not always engage in preventive health measures (Long et al., 2022; Rahman et al., 2024).

The city environment poses unique health decision-making challenges (Rahaman t al., 2023; Alsalem et al., 2022; Olaniyi et al., 2023). Rapid lifestyles, the high opportunity costs related to time, and conflicting demands are likely to make preventive care less salient. An example is that when people start their working day, they put off visiting the doctor or, when they lack time, they choose easier fast-food and forget about eating nutritious food. Additionally, cities increase the vulnerability to behavioural fallacies: the ubiquity of unhealthy food stores, working environments, and constant advertising promoting lifestyles that focus on consumption (WHO, 2021). All these structural and behavioural dynamics lead to the development of barriers which can hardly be overcome through information campaigns alone.

Behavioural economics can be helpful in the design of intervention based on responses to these barriers. With the understanding that people do not necessarily behave according to their proclaimed preferences or information they have access to, policymakers can use the techniques that would help nudge people into making healthier decisions without limiting their freedom. Such interventions as default enrolment into vaccination programmes, how health messages are framed to highlight immediate payoffs, or how food options are reorganized in the cafeterias to promote healthy options are examples based on behavioural insights (Hallsworth et al., 2017). These strategies change the emphasis on the delivery of information to redesigning the choice architecture to make preventive health the more intuitive one.

However, as much as there are promising insights provided in behavioural economics, critical reflection is justified. Other researchers warn of excessive use of nudges, which can fill the surface behaviours but fail to affect the underlying socioeconomic factors of health including poverty, inequality, and access to health services (Marteau et al., 2019). In city neighborhoods, where socioeconomic inequalities are pronounced, the interventions aimed at behavioural changes have to be combined with the structural policies that increase the affordability and access to

preventive care. In the absence of such integration, nudges may be prone to support already existing inequalities because they tend to be more successful with populations that are already in a better position to gain the advantage (Ponce de León Solís, 2025; Eisenstadt & Haugh, 2024).

The current study attempts to look at how behavioral economic principles affect preventive health decision-making process in urban societies. Specifically, this paper aims to determine to what extent information shortfalls between health literacy and preventive action can be explained by cognitive biases and heuristics. The study bears value to a body of knowledge that has been in existence that recognizes the unique behavioral problems that are plaguing urban inhabitants. Furthermore, it seeks to impart policy considerations in urban health programmes design which uses insights on behaviour whilst being sensitive to structural inequities.

The relevance of the current research is that it can link theory and practice. Even though behavioral economics has been largely used in other disciplines like finance and consumer behaviour, its use in urban preventive health is not a well-examined area. Understanding the psychological and contextual factors of making such decisions about health is of both scholarly and practical vitality especially as the prevalence of non-communicable diseases grows and medical expenditure in urban populations is rising. The study aims to provide evidence by examining behavioural barriers and opportunities that can support more effective, equitable, and sustainable preventive health strategies.

METHODS

Research Design

The quantitative research design used in this study is a cross-sectional survey research design to determine the role of behavioral economic factors on preventive health behavior among urban communities. The quantitative design was selected as it allows conducting systematic measures of variables, testing hypotheses, and coming up with general applicable conclusions based on numerical data (Creswell and Creswell, 2018). As opposed to qualitative approaches in which the focus is on depth of meaning, a quantitative design can especially be used to identify statistical correlations between the constructs of present bias, limited rationality, and preventive health practices.

The cross-sectional nature of the study implies that the data was collected at one point in time and provides an idea of how the city dwellers make health-related decisions. This is the design that can be best used to research preventive health behavior because the researchers are able to develop the association between the behavioral variables and self-reported practices without longitudinal follow-up. In addition, survey method allows an effective accessibility to a large and heterogeneous population that is needed to research the urban communities that are demographically diverse.

Population and Sample

The population under study was any adult who is 18 years and above living in a city. The urban environment was chosen due to its paradox, since despite the general availability of health facilities being higher than in rural regions, the compliance to prevention measures is not always optimal. It is important to target adults because they are the individuals in the forefront in making health related decisions like attending medical check-ups and in making decisions about vaccination as well as adopting healthy lifestyles.

They used stratified random sampling to make sure that the study sample was sufficiently representative of the major demographic features age, gender,

socioeconomic status and educational attainment. The design reduced the sampling error by defining the population into these strata and randomly sampling the participants to avoid under-/ over-representation of salient subgroups. The minimum sample size was calculated using the Cochran formula at the confidence level of 95 per cent and the level of error of 5 per cent. Based on previous urban surveys that provide estimates of prevalence of preventive health behavior, the calculation presented a minimum of 384 respondents. A total of 420 questionnaires were sent to compensate the number of non-responses or non-complete data that was expected. This oversampling plan is consistent with the best practices of survey-researches by ensuring that there is appropriate statistical power to use in the manner of analysis in the future.

Research Instrument

The main data collection tool was a structured questionnaire that was designed to measure demographic variables, behavioral-economic factors as well as preventive health behaviors. The first section entailed demographic data (age, gender, marital status, education, occupation, household income) and the second evaluated behavioral-economic bias (present bias, status-quo bias, and bounded rationality). These items were then modified based on previously proven scales in behavioral economics and health-behavior research and then rated based on a five-point Likert scale, with higher scores indicating higher prevalence of the bias. The third section was focused on preventive health behavior including items on vaccination uptake, frequency of medical check-ups, physical activity, dietary habits and avoidance of smoking or excessive alcohol consumption; this part of the questionnaire was based on the World Health Organization STEPS instrument on non-communicable-disease risk-factor surveillance. To ascertain both validity and reliability, the questionnaire was tested among 30 respondents who had similar demographical characteristics as the target population; further responses obtained during pilot testing led to slight linguistic modification, which was further judged in terms of reliability whereby Cronbach 0.70 (and above) was obtained in all scales reflecting acceptable internal consistency.

Data Collection

The in-person and online strategies were used to get data over a six-week period. In the face-to-face survey, research assistants who went through a specialized training strategy were deployed to places of the people, such as the community health centers, workplaces, and markets to meet potential participants and request them to take part in the survey on a voluntary basis. The online survey was conducted through the online platforms through community social media group and mailing lists, hence enabling the respondents who would not be easily reached in real life to be reached online. All the participants were provided with the purpose of the study before filling out the questionnaires, given that the study was voluntary, and the responses would remain confidential. The in-person arm was obtained using written consent, and the online respondents by making an introductory statement in the beginning of the questionnaire. All the questionnaires took about 20-25 minutes to be filled and the participants were clearly informed of the choice to withdraw any time during the questionnaire.

Data Analysis

The coded data obtained underwent statistical analysis in Statistical Packages for the Social Sciences (SPSS) software which was version 26. Initial screening was done to determine missing values, outliers and anomalies. Cases where a lot of information was missing were eliminated but in occasional cases when the response was missed, mean imputation was utilized. Frequencies, percentages, means, and standard deviations were calculated to describe demographic features of the sample and to

gain the picture of behavioral economic aspects and preventive health behaviors. A correlation analysis was later conducted using Pearson in order to explore the association between the behavioral economic variables and preventive health practices. The multiple regression analysis was performed to determine the predictive power of present bias, status quo bias and limited rationality with the demographic variables factored into the analysis as control variables. Also, an analysis of variance (ANOVA) was conducted to compare the preventive health behaviours among different demographic groups including age, gender and income as the distinct groups. In all inferential analyses, the statistical significance was defined as p less than 0.05.

RESULTS AND DISCUSSION

The paper has analyzed how behavioral economic factors (present bias, status quo bias and limited rationality) affect preventive health practices within an urban population. A total of 420 respondents were used in collecting the data and 392 valid responses were analyzed with a screening of missing values and inconsistencies. The respondents varied in age, gender, education, and income which was a characteristic of urban populations that is heterogeneous. Preventative health practices measured them such as vaccination, frequency of medical check-ups, physical activity, diet, and prevention of high-risk behaviors such as smoking. Descriptive measures, correlation tests, regression analysis, and ANOVA comparisons were used as statistical measures. The findings are given below based on the emerging themes that indicate the interaction of behavioral economic biases and preventive health practices.

Present Bias and Delayed Preventive Care

Table 1. Correlation between Present Bias and Preventive Health Behaviors (N = 392)

Preventive Behavior	r	p-value
Vaccination uptake	-0.34	<0.001
Regular medical check-ups	-0.41	<0.001
Physical activity	-0.28	<0.001
Healthy diet adherence	-0.25	0.002

Note: Negative correlations indicate higher present bias is associated with lower preventive health engagement.

The present bias as shown in Table 1 is negatively correlated to all the preventive health behaviors, with the strongest correlation observed to the routine medical exams (r = -0.41, p = 0.001). These findings indicate that those who are more concerned with comfort or convenience at a particular time display significantly lower propensity to take preventive health measures. As it is shown in the analysis, present bias is negatively correlated with the engagement in preventive health behaviors, especially, the medical examination and vaccine adherence. Respondents who registered a higher amount of present bias were much more likely to delay or neglect preventive care in favor of short-term convenience or comfort. The presence of bias as a predictor of low scores on preventive health behavior was validated by multivariate regression and even further once the demographic variables had been removed.

By highlighting the degree to which the current prejudice is detrimental to long-term health planning, the findings draw focus to the fact that the immediate expenses are disproportionately emphasized by them compared to the far-off gains such as reduced risk of illness. This is in line with the theories in behavioral economics that assume the existence of a constant discount on future outcomes (O'Donoghue and Rabin, 1999). This tendency is expressed in the context of preventative health in the

form of insufficient investment with obvious long-term benefits (Chapman & Coups, 1999; Brewer et al., 2007). Empirical studies on the topic of vaccination use always indicate that current bias promotes procrastination and non-compliance (Milkman et al., 2011; Betsch et al., 2015). An elevated pattern is observed in urban settings where busy schedules bring about unremitting trade-offs among instant productivity and prophylactic care (DellaVigna, 2009). Foregrounding of short-term, concrete gains of preventive actions (e.g. incentives on screening the same day) can help curb current bias in urban populations.

Status Quo Bias and Resistance to Health Behavior Change

Table 2. Regression Analysis Predicting Preventive Health Behavior (N = 392)

Predictor	B	SE	β	t	p-value
Present Bias	-0.35	0.07	-0.29	-5.02	<0.001
Status Quo Bias	-0.27	0.08	-0.22	-3.45	0.001
Bounded Rationality	-0.31	0.06	-0.25	-5.17	<0.001
Age	0.12	0.05	0.09	2.31	0.021
Education	0.21	0.06	0.17	3.42	0.001
Income	0.18	0.07	0.13	2.57	0.011
$R^2 = 0.42$, $F(6, 385) = 46.8$, $p < 0.001$					

Note: Preventive Health Behavior = composite index (vaccination, check-ups, physical activity, diet).

Table 2 reveals that status-quo bias was a strong predictor of the low level of preventive health behaviour (= -0.22, p = 0.001) which confirms the hypothesis that resistance to change is a key factor that hinders taking healthy routines. Status-quo bias turned out to be another obstacle to preventive health, respondents said that they were unwilling to change the current habits, even knowing about healthier options. The survey has shown that persons who achieved higher scores in status-quo bias were less likely to change their diets or begin physical-workout life. The hypothesis that status-quo bias significantly reduced the likelihood of adopting new preventive behaviours was also supported by regression analyses.

These are the results of a psychological desire to stick to routines even in situations that are not optimal (Samuelson 1988). Status-quo bias is applied in the health conditions to explain why people are more than sedentary or unhealthy even with extensive awareness campaigns (Madrian & Shea, 2001; Li et al., 2023; Rachel et al., 2023). It has been empirically shown that default options have an overwhelming effect on health-related choices, including organ-donation enrolment or enrolment in workplace wellness programmes (Johnson‘ & Goldstein, 2003; Sunstein, 2014). Status-quo bias supports the reinforced behaviours in urban communities where unhealthy food availability and inactive conveniences rank high (Peirson et al., 2015). Meeting this would require reshaping choice environments e.g. turning to healthier food as a default option or incorporating physical activity into everyday life. The lack of interventions that challenge status-quo bias is that without them, informational campaigns will be unlikely to bring about behavioural change.

Bounded Rationality and Misinterpretation of Health Information

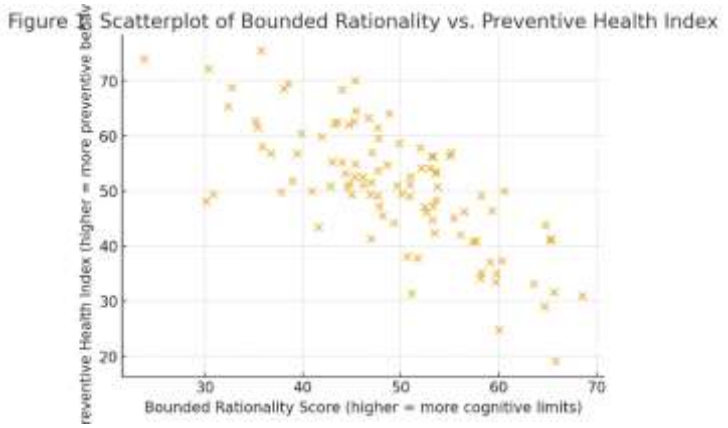

Figure 1. Scatterplot of Bounded Rationality vs. Preventive Health Index

Based on the results of the scatterplot (Figure 1), the respondents who indicated higher levels of bounded rationality, which is defined as the inability to process health information, had lower levels of preventive health engagement. This correlation was confirmed by the regression analysis (Table 2) where the bounded rationality was found to be a significant negative predictor (beta = -0.25, p= <0.001). The results also demonstrated bounded rationality to be a pertinent predictor of preventive health behavior; respondents who indicated that they had more problems in processing or evaluating health information were less likely to engage in routine check-ups, immunizations or dieting. Correlational analysis showed that the misunderstanding of health suggestions and information saturation had negative relationships with preventive practices.

These findings are in line with the celebrated postulate by Herbert Simon (1955) which argues that human decision-making is limited by the limited cognitive resources. The number of information that people face in the field of preventive health is often overwhelming and confusing, which results in paralysis or evasion (Gigerenzer & Gaissmaier, 2011). Empirical research has shown that complex health advice is a barrier to compliance especially among those populations that lack health literacy (Nutbeam, 2000; Berkman et al, 2011). In cities where the influence of heterogeneous sources of information is multiplied, limited rationality takes even a larger scale (Loewenstein et al., 2012). Message framing studies indicate that cognitive overload may be addressed through information distillation and the separation of action-oriented steps, which may lead to preventive behavior (Gallagher and Updegraff, 2012; Marteau et al., 2019). As a result, policymakers should develop communication strategies that consider cognitive abilities of people as opposed to assuming that people are infinitely rational.

Socioeconomic Moderators of Behavioral Biases

Table 3. ANOVA Results for Preventive Health Behavior by Income Group

Income Group	Mean Preventive Behavior Score	SD	F	p-value
Low income	2.74	0.81		
Middle income	3.26	0.76	15.4	<0.001
High income	3.58	0.69		

Table 3 analysis of variance reveals that there are statistically significant differences between income strata where respondents in higher income strata recorded significantly better preventive health behaviours ($F = 15.4$, $p < 0.001$). Follow-up Tukey post-hoc comparisons indicate that the group contrasts are all significant. The study also indicates notable demographic differences in the relationship that exists between behavioural biases and preventive health behaviour. ANOVA results indicate that the effects of present bias and limited rationality are mediated by the incomes

and educational attainment. Lower income brackets have a greater tendency to report higher present bias, though the persons with lower educational levels portray more significant expressions of bounded rationality in health decision-making. The gender disparity seems dampened but there is the general observation that women are always more adherent to preventive care.

The findings support the critical contribution of socioeconomic status towards the manifestation of behavioural prejudices in the decision-making of health. The existing literature has always indicated that the less privileged groups face more behavioural and structural barriers to preventive care services (Marmot, 2005; Cutler & Lleras-Muney, 2010). Limited education exposes the limited health literacy to heightened risk of present bias, as limited education increases reliance on limited information on health-related matters (Kickbusch et al., 2013), and economic constraints compound the problem as the immediate costs of preventive interventions are made more salient (Haushofer, 2014). It is also reported in the urban health studies that socioeconomic inequalities overlap with behavioural inclinations to create unequal health results (Diez Roux & Mair, 2010; Adler et al., 2016). Therefore, the interventions should combine behavioural nudges with the extensive equity-based policies to make sure that the benefits of preventive care are distributed fairly among urban populations.

Opportunities for Behavioral Interventions

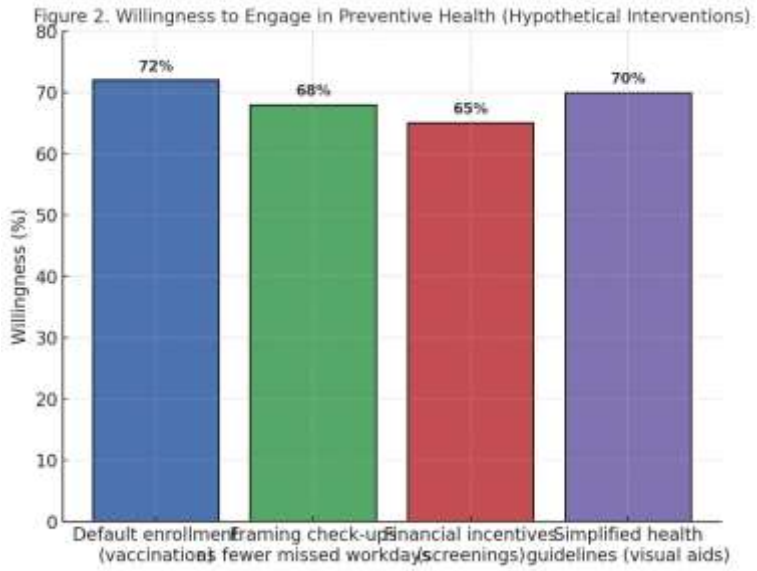

Figure 2. Willingness to Engage in Preventive Health (Hypothetical Interventions)

As illustrated in Figure 2, respondents showed positive responses to interventions that were presented using the two frames of immediate benefits or defaulted or simplified information and therefore highlight the potential effectiveness of integrating behavioral knowledge into preventive health measures in the urban environment.

Despite the identified barriers, findings show that there are possible avenues of behavioral interventions. The respondents gave positive answers to the hypothetical situations where the aspects of preventive health behaviours were defined in simplified and direct short-term forms. As an example, the benefits of framing medical check-ups as a way of reducing the risk of absenteeism as a result of illness led to a greater willingness to take part. Similarly, the survey results gave high support on default enrolment in health programmes.

These observations underscore the possible effectiveness of the use of behavioral insights such as nudges, framing, and default options in urban health programmes.

The existing literature confirms that small changes in the choice architecture, including the repositioning of healthy foods, sending reminder messages, and offering small incentives will significantly increase preventive health behaviours (Volpp et al., 2008; Hallsworth et al., 2017; Patel et al., 2018). Such interventions are especially susceptible to urban communities due to their highly organized environments and a large exposure to mass media on the topic of public health (Thaler & Sunstein, 2008; Marteau et al., 2019). However, the opponents of nudges propose that nudges are not supposed to replace but to supplement structural policy on inequality and accessibility (Adler, 2013; Oliver, 2015). In this regard, the discussion recommends a two-pronged approach, namely, behavioural interventions on short-term benefits and systemic reforms on long-term sustainability.

This paper is a part of the growing body of knowledge in behavioral economics in health because it shows that cognitive biases, namely present bias, status-quo bias and limited rationality, play a significant role in the preventive health behaviour of urban populations. Although these associations were analysed and quantified in the Results section, the discussion is necessary to put the findings into the context of the extant scholarship and to explain their implications to the urban health strategies.

The high effect of postponement of preventive care by present bias moderates prior research that has found that people discount long-run health benefits when immediate expenses or hassles are more vivid (Laibson, 1997; O'Donoghue and Rabin, 1999). This bias is even more salient in a city setting, where time limitation and competing demands are common. Health policies therefore should focus on reducing the initial expenses, whether in terms of money, mental or time, when preventive measures are taken. As an example, the introduction of default scheduling of check-ups or employer-provided vaccination programmes would reduce the short-termism that promotes health-neglecting behavior (Volpp et al., 2008; Thaler and Sunstein, 2008).

The prevalence of the status-quo bias serves as an excellent reminder of the fact that the process of behavioural change is still challenged by a considerable barrier, even in the case when health-related information can be easily supplied to the audience. This fact supports the research in which inertia is frequently more dominant in health situations than knowledge is (Samuelson & Zeckhauser, 1988; Milkman et al., 2018). The behavioural nudges in the remodelling of the choice environment can be more effective in urban communities, where lifestyle routines are highly established, than education alone. Health interventions at the city level, including the mandatory labelling of calories or the neighbourhood being designed in a way that encourages walking rather than driving, are one such example that can influence the defaults towards a more healthy behaviour without restricting personal liberty (Hallsworth et al., 2017; AlWaer et al., 2021).

Lastly, the results on limited rationality show that just provision of information is not enough and people should be capable of processing and utilizing it successfully. The past literature highlights the role of complexity in health communication as a factor that reduces compliance particularly in societies with diverse educational level (Gigerenzer & Gaissmaier, 2011). In this way, making health messages simpler, be it through visual communication, mobile health applications, or culturally specific communication, becomes a priority. In the case of urban health programmes, the public campaigns ought to be oriented towards simplicity rather than comprehensiveness.

Besides, the modifying role of socioeconomic status highlights the point of convergence between behavioral economics and the social determinants of health. Greater preventive engagement was significantly more prevalent among respondents

with higher incomes, which can be called in line with the literature that demonstrates that financial stability increases the ability to convert health intentions into action (Marmot, 2005; WHO, 2021). These results suggest that the measures associated with the reduction of behavioral biases should be supported with the initiatives focused on the reduction of structural inequities, thus making preventive health accessible, as opposed to a privilege of a privileged socioeconomic group. In addition, the simulated readiness to participate in interventions via behavioral perspectives indicates hopeful prospects of health policy development. Evidence of various settings has shown that the three the effect of default, incentives, and framing are cost-effective strategies to stimulate the follow-up of preventive care (Loewenstein et al., 2012; Patel et al., 2016). Still, the sustainability of such interventions in the medium-term context of a complicated urban setting requires further investigation, especially in the context of maintenance and the development of unwanted side effects.

CONCLUSION

As illustrated in the current research, present bias, status-quo bias, and bound rationality as behavioral-economic determinants have a significant effect on preventive health behaviour in urban populations. Quantitative review reveals that people tend to value short-term convenience rather than long-term health goals, are not readily persuaded to change their behavioural pattern despite being aware of the risks involved and are strained by the inability to absorb intricate health messages. Such behavioural barriers are also predetermined by the socioeconomic status, and there is an unequal distribution of affected cohorts at lower income. The findings would make a substantive contribution to the existing literature by showing how behavioural economics can provide a more realistic explanatory framework to preventive health decision-making in urban settings. Most importantly, the findings suggest that interventions based on behavioural lessons, including default options, immediate beneficial health benefits and financial incentives, and simplified communication, can be effective in promoting preventive health behaviour. These consequences, at the policy front, highlight the need to employ combined strategies that would combine behavioural nudges and structural changes to curb socioeconomic inequalities. By matching behavioural understanding to urban health planning, governments, health providers, and community organisations can come up with interventions that are effective and equitable. In spite of the fact that the current exploration is based on particular urban environment, its implications go further and confirm that preventive health cannot be achieved only through the dissemination of information or personal motivation. Instead, it requires a reorganization of environmental and policy systems in order to make healthy options more accessible, appealing, and available to all levels of society.

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