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The Role of Prospect Theory in Screening Behavior Decision-Making in a Health-Insured Population of South Africa

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Abstract

Background: Prospect theory suggests that people avoid risks when faced with the benefits of a decision but take risks when faced with the costs of a decision. Screening for diseases can be defined as a 'risk', in the context of uncertainty. The outcome can either be a 'benefit' of good health or a 'cost' of ill health or poor-quality health.

Purpose: To assess whether prospect theory can predict screening behavior in the context of a chronic disease diagnosis as well as the exposure to incentives to screen.

Methods: A retrospective longitudinal case-control study for the period 2008-2011 was conducted using a random 1% sample of 170,471 health-insured members, assessing screening for cancers, chronic diseases of lifestyle and HIV, some of whom voluntarily join an incentivized wellness program.

Results: Individuals diagnosed with a chronic disease screened up to 9.0% less for some diseases over time. Mammogram screening however increased ($p<0.001$). Where a family member was diagnosed with a chronic disease, individual screening decreased up to 8.6%. Similarly females in families where a member was diagnosed with a chronic disease screened more for breast cancer ($p<0.001$). Males were more sensitive to incentives only for HIV screening ($p<0.001$), while the female responses to incentives were inconsistent.

Conclusion: A chronic disease diagnosis or the risk of developing a chronic disease resulted in reduced future screening behavior for most diseases. The role of incentives was inconsistent. Prospect theory adequately predicts screening behavior when diagnosed or faced with a possible chronic disease diagnosis for most screening tests except for females screening for breast cancer.

Keywords: Behavior economics; Prospect theory; Behavioral decision making; Screening; Chronic diseases; Cancers; HIV; Incentives

Introduction

Screening behavior decision-making is often poorly understood [1]. Early detection of risk factors and screening for asymptomatic diseases is recognized as integral to any comprehensive strategy to prevent cardiovascular diseases and cancers (Centers for Disease Control and Prevention, 2008). Improving access to screening as part of a package of clinical preventive services has been shown to be an evidenced-based intervention with the potential to improve risk and subsequently prevent disease. It is widely accepted that screening for preventable diseases decreases morbidity and mortality, especially for breast, cervical, and colorectal cancers [2-5]. However, screening below recommended targets remain widespread [6,7]. Preventive screening behavior in the context of any other chronic disease diagnosis or when a family member has been diagnosed with a chronic disease has never been described. Prospect theory, however, has been used to describe decision-making in the context of risk [8-10]. According to Kahneman and Tversky, the first to describe prospect theory, the experimental evidence for prospect theory confirms the manner in which individuals make decisions in risky situations [11,12]. The theory postulates that people are risk averse in choices involving certain gains, but risk seeking in choices involving certain losses. Choices are made based on values placed on the gain or loss relative to a reference point and decision weighing of the outcomes. This theory has gained favor as an alternate theory of choice over the standard economic model or expected utility theory in attempting to understand decision making within the health domain [13-15]. One of the cornerstones of the standard economic model is the concept that people are rational agents and utility maximizers [12]. However, early work by psychologists like Edwards, Luce, Tversky and Kahneman identified several psychological influences that cause judgments and choices to deviate from statistical principles of utility maximization. People's values (and consequently judgments), may not conform to normative theory, as probabilities are thought to be treated nonlinearly instead of linearly as required by expected utility theory (Treadwell). In addition, Kahneman describes the issue of bounded rationality – that our decision-making power is influenced by our experiences, our environment and the limited time we have available to make these decisions. In fact people are thought to use decision short-cuts (also known as heuristics), which results in systematic errors or biases in judgment [12,16]. Two theoretical constructs that Kahneman describes, as part of a "map of bounded rationality", are prospect theory and framing effects, both of which guide choices.

Prospect theory dictates that perception is reference-dependence and influences choice given a prior context or previous stimuli [12,16]. This suggests that people make choices based on their current situation, the amount of information they have at hand and their experiences

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either in the past or present. When people are newly diagnosed with a chronic disease or if a family member, for example, suffers a cardiac arrest, does this context or new information influence their decision making to participate in health enhancing or disease detecting activities? Prospect theory may then be used to further evaluate people's behaviour in this context.

In addition, most individuals are motivated by actions that produce measurable, tangible benefits, but are much less motivated by actions that do not produce tangible progress toward a goal. The concept of "nudge" has become an interesting option for steering good behaviour [17] and has been found to have some benefit for consideration [18,19]. It is thus postulated that if someone receives a reward (which is immediate and tangible) for doing certain health enhancing or promoting tests, it could steer behaviour in a positive way. Thus, in principle, incentives and rewards – tangible, measurable consequences to an action, – start to play an increasingly important role in motivating certain intended behaviours and can be used to motivate healthy behaviours [20,21]). Incentives in particular have been shown to be useful in steering positive behaviour [22,23] and can thus be used to overcome behavioural biases, leading individuals to make better health choices.

The aim of this paper is to evaluate whether prospect theory could predict screening behavior in those who have already been diagnosed with a chronic disease or in those who have a family member diagnosed with a chronic disease. Are people risk seeking (not screening for preventive diseases) when faced with the risky situation of already being diagnosed with a chronic disease when the outcome has a certain cost associated with it (the possibility of being diagnosed with another disease), or are they risk averse? Similarly, do people take the risk of not screening for a preventable disease when a family member has a chronic disease diagnosis, or do they avoid screening? The use of incentives provides further complexities in steering health seeking behavior in the context of uncertainty and risk, which this paper aims to evaluate. The study aims to understand the screening behavior of health insured individuals who have a confirmed chronic disease diagnosis (and those of their family members) by utilizing the health insurers Chronic Illness Benefit data. Members are encouraged to join the Chronic Illness Benefit via their health practitioner in order to confirm their diagnoses as well as gain access to the best mediation and health care management.

The rationale for assessing screening behavior when diagnosed with any chronic disease (or when a family member is diagnosed with a chronic disease) is based on the theoretical framework of prospect theory, which suggests that when people are faced with new information (in this case a chronic disease diagnosis), they tend to take the risk of not screening for further/any other chronic diseases. The rationale is that the potential cost of finding/identifying further diseases is high, thus avoiding further screening and taking greater risks. Comparing the screening rates for those with a chronic disease (or when a family member has a chronic disease) to those without a chronic disease could provide an indication of screening choices (and risk taking) based on or related to a diagnosis of any other pre-existing disease.

Methods

The study design was a longitudinal case-control consisting of a random 1% sample (170,471 individuals) of medically insured individuals belonging to Discovery Health (the largest medical insurer in South Africa), tracked over time between 2008-2011. Discovery Health offers a fully paid-for screening benefit for all its members, regardless of plan type, which includes cholesterol, glucose, and Human Immunodeficiency Virus (HIV) tests, mammograms, Pap smears, and screening for prostate-specific antigen (PSA) and glaucoma. Members of the health insurance can voluntarily opt into joining an incentivized wellness program linked to the health insurance company called Vitality at the cost of around $20 per month. Individuals diagnosed with a chronic disease are encouraged to join the Chronic Illness Benefit, where conditions and medications are managed in accordance with managed care principles. To assess individual-level decision making on screening for tests covered in the screening benefit, eligibility criteria included all individuals over 18 years of age diagnosed with any chronic disease in 2008, captured on the Chronic Illness Benefit as per ICD10 classifications. Chronic diseases included in the analyses are outlined in Appendix 1. Controls included all individuals over 18 years not diagnosed with any chronic disease in 2008. Furthermore, for household-level decision making, eligibility criteria for cases included any family member within a household where a family member has been diagnosed with a chronic disease in 2008, compared to controls where no family member was diagnosed with a chronic disease in 2008. The outcome variable assessed was screening rate (for glucose, cholesterol, HIV, mammography, Pap smears, PSA, colorectal cancer and osteoporosis screening) for all cases and controls at two separate points in time (2008 and 2011) which was extracted from claims data captured using Current Procedural Terminology (CPT) codes. Eligibility criteria for the different screening tests were as follows: all adults aged 18 and older for cholesterol, glucose, and HIV screening; males 50 years and older for prostate cancer screening (PSA); females 16 years and older for Pap smears; females 35 years and older for mammograms; adults 50 years and older for colorectal cancer screening and females 65 years and older for osteoporosis screening (bone scans). The eligibility criteria are an adaptation of the United States Preventative Task Force guidelines and chosen by the medical insurance to encourage more people to screen. Given the size of the insured population, prevalence of disease and cost of curative care, the insurer deems these criteria to be a cost effective screening strategy.

The insurer to date has demonstrated no adverse effects of these screening guidelines.

Ethical clearance for the study was provided by the Human Research Ethics Committee (certificate number M120854).

Statistical Analysis

A descriptive analysis was performed to identify the demographic characteristics of the sample as well as the proportion of individuals and household members diagnosed with a chronic disease during the study period. The screening rate was calculated as the number of screening tests per eligible population in 2008 and again in 2011. The difference in screening rate over time was compared between cases and controls using the difference-in-difference methodology. This method attempts to take into consideration pre-existing differences between cases and controls that may exist during a general time trend. It assumes that whatever happened to the control group over time is what would have happened to the cases group in the absence of treatment (i.e. chronic disease diagnosis). Further stratification of the sample by gender and wellness membership was conducted to identify possible confounders. The statistical difference in mean screening rate over time between cases and controls was calculated using Student's t-tests for matched pairs with a significance level set at $p<0.05$ (two-tailed). Effect size measurements were calculated using Cohen's d. All data were calculated using the STATA program (Stata Corporation 12.0).

Results

Participants consisted of a random sample of 174,471 individuals. Approximately 38% of the sample was aged 18-35 years, 33.3% were 36-50 years, 14.5% were 51-60 years, and 13.7% were over 60 years. Forty eight percent were male and 52% female. Just over 64% of the sample was members of Vitality. Chronic disease prevalence in the sample was 6% in 2008 and 6.3% in 2011. Approximately 13.7% of individuals were part of a household where at least one family member was diagnosed with a chronic disease in 2008, compared to 16.3% in 2011. Uptake of screening services of the entire population (n = 1 889 447) ranged from only 0.4% for colorectal cancer to 31.9% for prostate cancer in 2011. This data is shown in Table 1.

Individual screening behavior

Baseline screening rates tended to be higher for most screening tests in individuals who were diagnosed with a chronic disease compared to those without a chronic disease. HIV testing was the only test where baseline-testing results were not higher in the chronic diseases patients compared to the non-chronic disease patients. The greatest decrease in net screening rate (of 9.0% decrease) occurred in the population who screened for prostate cancer.

Screening for breast cancer was the only screening test that resulted in a net increase of 0.27% over time when compared to the screening rate for those who have a chronic disease diagnosis and those who do not. Those with a chronic disease screened 0.07% more compared to those without a chronic disease, who screened 0.2% less.

All the differences in screening rates were significant at $p<0.001$. However, overall, the effect size measured as Cohen's d, indicated that the magnitude of the significance appears small (ranging from $d = 0.03$ to $d = 0.146$). These results are depicted in Table 2.

Variables		Percentage (%)	
Age groups (range of years)	18-35	38.5	
	36-50	33.3	
	51-60	14.5	
	>60	13.7	
Gender	Male	48	
	Female	52	
Wellness program membership	Vitality members	64.3	
	Non-Vitality members	35.7	
Chronic Disease Prevalence	Individual	6.0 (2008)	6.3 (2011)
	Family Member	13.7 (2008)	16.3 (2011)
Screening Uptake of Eligible Members for 2011 (n=1 889 447)	Cholesterol	20.5	
	Glucose	23.8	
	HIV	8.2	
	Colorectal Cancer	0.4	
	Prostate Cancer	31.9	
	Cervical Cancer	16.7	
	Breast Cancer	13.3	
	Osteoporosis	5.7	

Table 1: Demographic Characteristics of Study Sample.

Family member screening behavior

Screening rates in 2008 tended to be higher for most screening tests in individuals who had a family member diagnosed with a chronic disease compared to those without a family member diagnosed with a chronic disease. HIV and Pap smear testing were the only tests where baseline-testing results were not higher in the individuals with a family member diagnosed with a chronic disease compared to those without a family member diagnosed with a chronic disease.

At family level, screening rates decreased between 0.3% and 8.6% for colorectal cancer screening and prostate cancer screening respectively.

Screening for breast cancer, once again, was the only screening test that resulted in a net increase of 0.7% over time when comparing the screening rate for those who have a family member diagnosed with a chronic disease and those who do not. Family members with a chronic disease increased their screening rate for breast cancer by 1.8% whereas those without a family member diagnosed with a chronic disease only increased their screening rate by 1.1% over time. All mean differences were statistically significant ($p<0.001$), while effect size measurements of Cohen's $d = 0.004$ to $d = 0.155$ indicates that the magnitude of the significance appears small.

	Individuals	Screening Rate 2008 (N)	Screening Rate 2011	Difference	Difference-in-Difference	p-value	Cohen's d
Cholesterol Screening	Chronic Disease	29.1% (N=6483)	29.4% (N=6176)	0.3	-5.9	<0.001	0.037
	No Chronic Disease	17.1% (N=6613)	23.3% (N= 6765)	6.2			
GlucoseScreening	Chronic Disease	28.1% (N=6483)	30.5% (N=6176)	1.6	-6.0	<0.001	0.037
	No Chronic Disease	17.3% (N=6613)	24.9% (N= 6765)	7.6			
HIVScreening	Chronic Disease	4.4% (N=6483)	7.9% (N=6176)	3.5	-1.4	<0.001	0.009
	No Chronic Disease	6.9% (N=6613)	11.8% (N= 6765)	4.9			
Colorectal CancerScreening	Chronic Disease	1.3% (N=2863)	0.6% (N=3027)	-4.5	-4.2	<0.001	0.030
	No Chronic Disease	0.5% (N=6613)	0.2% (N= 6765)	-0.3			
Prostate CancerScreening	Chronic Disease	37.5% (N=1324)	36.4% (N=1411)	-1.1	-9.0	<0.001	0.146
	No Chronic Disease	21.9% (N=473)	29.8% (N= 600)	7.9			
Pap Smears	Chronic Disease	17.5% (N=3455)	18.5% (N=3278)	1.0	-0.5	<0.001	0.004
	No Chronic Disease	22.2% (N=3673)	23.7% (N= 3700)	1.5			
Mammograms	Chronic Disease	18.57% (N=2546)	18.64% (N=1411)	0.07	0.27	<0.001	0.003
	No Chronic Disease	15.6% (N=1732)	15.4% (N=1984)	-0.2			
Bone Scans	Chronic Disease	8.7% (N=840)	8.2% (N=977)	-0.5	-2.1	<0.001	0.044
	No Chronic Disease	6.3% (N=174)	7.9% (N= 240)	1.6			

Table 2: Screening rates of individuals diagnosed with a chronic disease.

These results are outlined in Table 3.

Stratification by gender and wellness membership

When stratified for other possible variables (gender and Vitality status), significant increases in screening behavior were seen only for HIV and breast cancer screening at the family level population.

For HIV screening - males on the Vitality program who had a family member diagnosed with a chronic disease screened 7.1% more in 2011 compared to 2008. Males on Vitality without a family member diagnosed with a chronic disease only increased their HIV screening by 6% between 2008 and 2011, resulting in a difference-in-difference screening rate of 1.1% more. Males not on the Vitality program did not yield the same results and decreased their overall screening rate by 1.0% over time.

Females, however, showed greater increases in screening behavior among those not belonging to the Vitality program who had a family member diagnosed with a chronic disease compared to those who did not have a family member diagnosed with a chronic disease. These females screened 0.3% more for HIV over time. Differences in screening rates for all the groups were significant at $p<0.001$ while effect size measurements (Cohen's d) $d = 0.005$ to $d = 0.047$ suggests small magnitude of significance. This data is shown in Table 4.

Discussion

Baseline screening for chronic diseases tended to be higher in the 'cases' compared to the 'controls' in this study population. This may infer that health care professionals perhaps use the patients' presentation at the medical facility as an opportunity to test for a battery of other tests. But the testing behavior is not sustained over time.

Individuals diagnosed with a chronic disease significantly decreased their screening rate over time for most screening tests. This finding is inline with prospect theory and behavior in the context of risk. According to prospect theory, people are much more sensitive to losses and tend to derive utility from gains and losses relative to a certain reference point [16]. In the context of being diagnosed with a chronic disease, the sense of 'loss of health' spurred people on to prevent further losses in health by *not* screening more for preventable diseases. The deviation from health (the reference point) to ill health theoretically have resulted in decreased screening rates, as future outcomes of screening would have caused further deviation from that reference point of health. Newsom et al. described how major behavior change theories do not include explicit predictions about behavior change in the context of chronic illness, however the basic tenets of behavior change theories suggests that the onset of chronic illness should at least

	Family Members	Screening Rate 2008 (N)	Screening Rate 2011	Difference	Difference-in-Difference	p-value	Cohen's d
Cholesterol Screening	Chronic Disease	30.2% (N=5211)	30.8% (N=5173)	0.6	-6.0	<0.001	0.128
	No Chronic Disease	18.0% (N=5053)	24.6% (N= 6765)	6.6			
GlucoseScreening	Chronic Disease	28.3% (N=5211)	31.5% (N=5173)	3.2	-4.9	<0.001	0.104
	No Chronic Disease	17.8% (N=5053)	25.9% (N= 4976)	8.1			
HIVScreening	Chronic Disease	4.2% (N=5211)	7.6% (N=5173)	3.5	-1.4	<0.001	0.029
	No Chronic Disease	6.6% (N=5053)	11.4% (N= 4976)	4.8			
Colorectal CancerScreening	Chronic Disease	1.3% (N=2464)	0.7% (N=2448)	-0.6	-0.3	<0.001	0.004
	No Chronic Disease	0.5% (N=852)	0.2% (N= 843)	-0.3			
Prostate CancerScreening	Chronic Disease	36.5% (N=1142)	37.4% (N=1139)	0.9	-8.6	<0.001	0.155
	No Chronic Disease	23.6% (N=402)	33.1% (N= 398)	9.5			
Pap Smears	Chronic Disease	18.1% (N=2760)	18.3% (N=2741)	0.2	-2.4	<0.001	0.023
	No Chronic Disease	22.7% (N=2815)	25.3% (N= 2763)	2.6			
Mammograms	Chronic Disease	18.5% (N=2125)	20.3% (N=2106)	1.8	0.7	<0.001	0.008
	No Chronic Disease	15.6% (N=1432)	16.7% (N= 1510)	1.1			
Bone Scans	Chronic Disease	9.3% (N=742)	7.8% (N=734)	-1.5	-3.4	<0.001	0.080
	No Chronic Disease	7.0% (N=157)	8.9% (N= 156)	1.9			

Table 3: Screening rate for individuals who have a family member diagnosed with a chronic disease.

Family Members	Gender and Vitality Status	Chronic DiseaseStatus	Screening Rate 2008 (N)	Screening Rate 2011 (N)	Difference	Difference-in-Difference	p-value	Cohen's d
HIV Screening	Males on Vitality	With Chronic Disease	6.3% (N=1513)	13.3%(N=1528)	7.1	1.1	<0.001	0.014
		Without Chronic Disease	8.1%(N=1641)	14.1%(N=1689)	6			
	Males not on Vitality	With Chronic Disease	2.0%(N=986)	2.1%(N=952)	0.1	-1.0	<0.001	0.045
		Without Chronic Disease	2.4%(N=736)	3.5%(N=661)	1.1			
	Females on Vitality	With Chronic Disease	5.9%(N=1505)	9.9%(N=1511)	4.0	-2.6	<0.001	0.012
		Without Chronic Disease	8.1%(N=1836)	14.7%(N=1846)	6.6			
	Females not on Vitality	With Chronic Disease	1.2%(N=1207)	1.9%(N=1182)	0.7	0.3	<0.001	0.005
		Without Chronic Disease	4.2%(N=840)	4.6%(N=780)	0.4			
Mammograms	Females on Vitality	With Chronic Disease	23.3%(N=1083)	23.4%(N=1078)	0.1	0.4	<0.001	0.006
		Without Chronic Disease	19.3%(N=928)	19.0%(N=925)	-0.3			
	Females not on Vitality	With Chronic Disease	13.6%(N=1042)	17.1%(N=1028)	3.5	-2.6	<0.001	0.047
		Without Chronic Disease	8.9%(N=504)	15.0%(N=479)	6.1			

Table 4: Stratification associated with increased screening uptake.

motivate lifestyle changes [24]. Data from the United States Health and Retirement Study also found very low levels of behavior change 2-14 years after heart disease, stroke, cancer, diabetes and lung disease diagnoses [24].

In this instance, people act quite irrationally (not because they depart from standard axiom of risk aversion, which is what prospect theory suggests), but because they risk a large true loss: quality of life, opportunity to avert further ill health or even death by avoiding screening.

Females diagnosed with a chronic disease, however, increased their screening rate over time for breast cancer. According to Deeks et al. [25] women are more likely to have annual checkups, screening tests and seek health advice. Adherence to cancer screening in women were found to be associated with a fear of cancer but trust in health care providers; understanding risk and framing routine care as status quo [1]. Several studies have demonstrated a notable sex difference in health-related decision making, and women are often found to be more cautious in survival-related circumstances and will thus take more risks in order to survive. Women, according to McDermott are also more susceptible than men to the way in which the message is framed [26]. Framing the health message in a loss-framed manner has been shown to have a larger impact on intended behavior related to preventive health screening when the perceived risk involved is high [27].

Individuals who have a family member diagnosed with a chronic disease also decreased their screening rate over time for most preventable diseases. Dolan et al found that current health status does influence valuations, however people who had been ill in the past or who had family members who were ill did not generally differ from people with no past illness [28]. This, according to Dolan is due to the fact that, as experience with illness becomes more remote, its effect on health state values becomes less. This implies that even when there is a certain risk of developing certain chronic diseases when a family member has the same diagnosis, and screening may mitigate that risk, people are risk seeking by not screening when faced with possible losses (in health status). Yet again, even though the knowledge of certain health outcomes in family members spur individuals on to avoid certain losses, they are once again placing themselves at higher risk given that they are not screening for possible diseases that they may be susceptible to.

Females, who had a family member diagnosed with a chronic disease, however screened more for breast cancer over time. Women have a gender advantage in terms of mortality and life expectancy [29]. According to Wingard, these differences can be explained by both biological and social/behavioral factors as women tend to engage less in lifestyle behaviors that are detrimental to health. Women are also traditionally more responsible for family health and are more knowledgeable about pathological signs and thus have a higher propensity to use health care services than men [30].

Males who had a family member diagnosed with a chronic disease who were themselves exposed to incentives increased their screening rate for HIV over time. This sub-group of the population was thus less risk averse. The use of incentives has become an increasingly popular means to entice positive changes in health behavior [31]. Although incentives show promising results in their efficacy in promoting preventive care activities, they have been shown to work best in highly structured environments when coupled with client reminders, and tends to promote behavior change only in the short term (32-35). Very little evidence exists on the gender differences in response to incentives, but some studies have shown that men tend to respond better when the incentive is monetary and of greater value [36,37]. Why men in this population diagnosed with a chronic disease increased their screening rates for HIV when exposed to incentives is unclear.

Females who had a family member diagnosed with a chronic disease who were not personally exposed to incentives increased their screening rate for HIV over time. However, females in the Vitality program who had a family member diagnosed with a chronic disease screened more for breast cancer over time. The role of incentives in this instance, proved to be inconsistent, in line with previous findings where incentives are found to be effective and applicable in certain settings, but do not work in others [31,38]. It may be that prospect theory has greater utility in predicting screening behavior in certain populations, under certain circumstances and with certain diseases. This could be the case for males, specifically exposed to incentives and for HIV screening in particular.

In general, the screening rate for chronic disease suffers was higher than non-chronic disease sufferers initially, but the rate of increase of screening was not as high in those with chronic diseases compared to those without. This implies that screening tests may have been used as opportunity tests during the time of chronic disease diagnoses for these patients. Over time, these patients may have then dropped out of the health care system or possibly too ill to continue their screening tests for other diseases. Health care providers should thus take special precautions not to let chronic disease sufferers fall by the wayside for ongoing screening tests. Population-based screening targets should be reviewed to specifically include those who have already been diagnosed with a chronic disease.

Future research considerations should focus on the framing of screening in health communication, especially in the context of uncertainty as demonstrated, given a chronic disease diagnosis. This would assist in understanding if screening behavior can be influenced if screening is framed as benefit, and not a risk.

In addition, the association of gender, the presence of incentives and even the perception of disease severity and the utility of screening should be further explored in relation to screening behavior choices.

Limitations

The study did not evaluate the impact of health message framing on the outcome of screening, a significant area of prospect theory. It also did not evaluate patient's perceptions of risks, costs, benefits and gains, thus making assumptions on the value of screening based only on the medical view of the utility of screening for diseases. Inferences on the role of incentives can only be reported as a 'possible' impact and associations of cause and effect cannot be implied as patients voluntarily join the incentivized wellness program.

Conclusion

In the context of chronic disease diagnoses and future screening behavior, prospect theory is able to predict behavior for most screening tests. Individuals who have a family member diagnosed with a chronic disease are risk seeking by not screening themselves when faced with the possible loss of their own health. Women who screen for breast cancer are the only group in which behavior in the context of risk according to prospect theory cannot be applied.

The role of incentives was inconsistent with respect to steering screening behavior for individuals diagnosed with a chronic disease or with a family member who has been diagnosed with a chronic disease.

Health care providers should remain vigilant towards chronic disease sufferers so that they do not become neglected from continuing their screening tests for other chronic diseases, HIV and cancers.

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