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Determinants for rejecting a preventive treatment against heart disease

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Abstract

Chronic diseases represent a significant burden to society in terms of number of patients as well as treatment costs. Lifestyle changes and medical intervention can prevent or delay an estimated 80% of all heart diseases. This study presents determinants for rejecting a preventive treatment against heart disease.

A representative sample of 40-60- year-old Danes was invited to take part in a web-based survey. Our respondents were presented with a hypothetical scenario and asked to imagine that they were at an increased risk of developing heart disease, and subsequently asked whether he/she would accept a treatment offer for a medical intervention (Table 1). The respondents were informed about the risk reduction, the cost, the frequency of expected visits to their general practitioner (GP), and the potential side effects related to the treatment. The aim was to elicit preference structures including determinants for rejecting a treatment offer.

Close to 1100 respondents were included in this study and sample characteristics were in agreement with the age-adjusted Danish population (Table 2).

About one third of the respondents were willing to accept the preventive medical treatment offered. The unadjusted analysis indicated that acceptance decreased with age, but adjustment for experience with heart disease reduced the significance of age as a determinant for treatment acceptance (Table 3).

The price of treatment significantly reduced the willingness to accept the treatment offered for the lower income groups, whereas it had no effect in the highest income group (Table 4). More than 50% of respondents initially willing to accept treatment changed that decision following information on potential side effects (Table 5).

In accordance with our pre-study hypothesis, individuals with low income were more sensitive to price than individuals with high income. Thus, if the price of preventive medication increases above certain limits, a substantial proportion of the financially weaker part of the population may refrain from treatment. More than half of the respondents who were initially willing to accept treatment changed their decision when informed about the presence of potential side effects. This is an important observation in relation to risk communication. Since most side effects occur very seldom, a skewed assessment of treatment efficacy compared to the risk of side effects may cause some patients to refrain from otherwise beneficial treatment. Thus, more research is needed to better allow patients to compare treatment efficacy with risk of side effects.

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Table 1. Extract of questionnaire

Imagine that you are visiting your GP
The GP tells you that you have an increased risk of a heart disease even though you presently do not experience any troublesome symptoms.
Your GP informs you that for one in ten persons like you, the disease will develop and have serious consequences for your health.
You cannot know beforehand whether you belong to the small group (10%) who will get the heart disease, or to the larger group (90%) who will not.
There is now a possibility of medical treatment.
The medicine is preventive, and you will need to take it the rest of your life.
When you begin taking the medicine it will immediately reduce your risk of serious heart disease from 10% to 5%.
The medicine will cost you X DKK every month (X = 100, 400, 700), and you will need to visit your GP for control Y times (Y = 2 times per month, 1 time per month, 4 times per year).

1. Will you based on this information accept the offer and begin preventive medical treatment?
   a. Yes
   b. No

Related to the use of the medicine some people will for shorter or longer periods experience side effects such as lack of appetite, dizziness, tiredness, headache, and an increased tendency to sweat. Often these side effects may occur before you will get the benefit of the medicine.

2. Will these side effects change your assessment whether to accept the treatment?
   a. Yes
   b. No

Table 3. Willingness to accept treatment

	Accepting, n (%)	OR* (95%-CI)	Test for trend*
Total	365 (34.1)	-	-
Gender		p=0.760	
female	195 (35.6)	(ref.)	-
male	170 (32.6)	0.96 (0.74, 1.25)	
Age groups		p=0.421	
40-44	52 (28.9)	(ref.)	p=0.077
45-49	91 (32.7)	1.10 (0.72,1.68)	
50-54	90 (33.7)	1.22 (0.80, 1.86)	
55-60	132 (38.4)	1.39 (0.93, 2.08)	
Health status		p=0.813	
good/very good	216 (32.3)	(ref.)	p=0.529
fair	119 (36.6)	1.07 (0.79, 1.43)	
poor/very poor	29 (38.7)	1.16 (0.69, 1.97)	
Experience with heart disease		p<0.001	
yes, have or have had myself	35 (63.6)	(ref.)	-
yes, family member has had	87 (35.5)	0.33 (0.18, 0.62)	
no	232 (31.4)	0.27 (0.15, 0.48)	
Household income		p=0.522	
Low	114 (34.7)	(ref.)	p=0.428
medium	120 (32.6)	0.96 (0.69, 1.33)	
high	100 (37.6)	1.16 (0.82, 1.65)	

*adjusted for gender, age (four groups), experience with heart disease, price

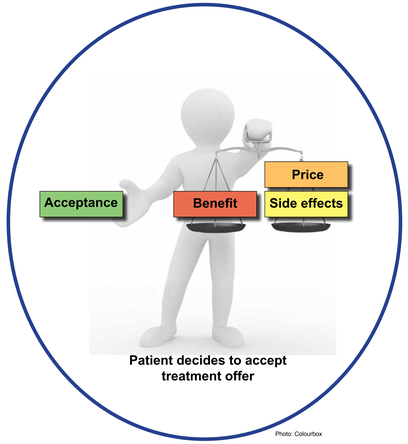

Table 2. Sample characteristics

	Respondents
Total, n	1069
Gender, n (%)	
female	521 (48.7)
male	548 (51.3)
Age, mean (SD)	50.8 (5.8)
Age groups, n (%)	
40-44	180 (16.8)
45-49	278 (26.0)
50-54	267 (25.0)
55-60	344 (32.2)
Health status, n (%)	
good/very good	668 (62.5)
fair	325 (30.4)
poor/very poor	75 (7.0)
Experience with heart disease, n (%)	
yes, have or have had myself	55 (5.3)
yes, family member has had	245 (23.6)
no	739 (71.1)
Household income, n (%)	
Low (< 67,000 Euro)	329 (34.2)
medium	368 (38.2)
high (> 110,000 Euro)	266 (27.6)

Table 4. Willingness to accept treatment versus price

	n (%)*	OR** (95%-CI)	Test for trend**
Low income			
Price per month		p=0.003	
DKK 100	49 (46.7)	(ref.)	p=0.001
DKK 400	44 (35.8)	0.56 (0.32, 1.00)	
DKK 700	21 (21.0)	0.32 (0.17, 0.62)	
Medium income			
Price per month		p=0.039	
DKK 100	50 (40.7)	(ref.)	p=0.011
DKK 400	37 (30.8)	0.67 (0.39, 1.16)	
DKK 700	33 (26.4)	0.49 (0.28, 0.85)	
High income			
Price		p=0.071	
DKK 100	42 (44.7)	(ref.)	p=0.558
DKK 400	22 (22.6)	0.47 (0.25, 0.91)	
DKK 700	36 (41.9)	0.85 (0.46, 1.57)	

* Number accepting treatment and percentage out of all subjects in the category
** Adjusted for gender, age (four groups), experience with heart disease

Table 5. Willingness to accept treatment despite potential side effects*

	Accepting, n (%)	OR** (95%-CI)	Test for trend**
Total	156 (42.7)	-	-
Gender		p=0.832	
female	84 (43.1)	(ref)	-
male	72 (42.4)	0.95 (0.62, 1.47)	
Age groups		p=0.257	
40-44	18 (34.6)	(ref)	p=0.960
45-49	47 (51.7)	1.96 (0.96, 4.03)	
50-54	37 (41.1)	1.23 (0.60, 2.54)	
55-60	54 (40.9)	1.38 (0.70, 2.74)	
Health status		p=0.682	
good/very good	95 (44.0)	(ref)	p=0.458
fair	48 (40.3)	0.97 (0.43, 2.22)	
poor/very poor	12 (41.4)	1.24 (0.59, 2.58)	
Experience with heart disease		p=0.609	
yes, have or have had myself	14 (40.0)	(ref)	-
yes, family member has had	34 (39.1)	0.81 (0.50, 1.31)	
no	103 (44.4)	0.86 (0.38, 1.97)	
Price		p=0.401	
DKK 100	69 (45.7)	(ref)	p=0.705
DKK 400	43 (37.7)	0.71 (0.43, 1.18)	
DKK 700	44 (44.4)	0.94 (0.56, 1.59)	

* among the 365 (34.1%) subjects who originally accepted treatment
** adjusted for gender, age (four groups), experience with heart disease, price