Duke University Spirituality and Health Research Seminar 2022



Heart, Soul and Spirit

The Impact of Religion and Spirituality on Cardiovascular Disease

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Duke University Spirituality and Health Research Seminar 2022

INTRODUCTION

Handbook of Religion and Health R/S and (cv) Mortality



HANDBOOK OF Religion and Health

Second Edition

HAROLD G. KOENIG DANA E. KING VERNA BENNER CARSON About the Authors ix Foreword by Linda George xi Preface by Jeff Levin xiii

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Special Article

Psychotherapy and Psychosomatics

Psychother Psychosom 2009;78:81–90 DOI: 10.1159/000190791 Received: March 26, 2008 Accepted after revision: April 3, 2008 Published online: January 14, 2009

Religiosity/Spirituality and Mortality

A Systematic Quantitative Review

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Key Words

Body-mind-spirit interaction • Meditation, prayer • Meta-analysis • Positive psychology • Preventive medicine • Religious coping • Well-being havioral factors (smoking, drinking, exercising, and socioeconomic status), negative affect, and social support. We divided studies according to the aspects of religiosity/spirituality measure examined, and found that organizational activity (e.g. church attendance) was associated with greater

Healthy Populations

	n (%)	HR (95% CI)	p value	heterogeneit	τ γ	
Overall analysis ^{1, 2}	44 (100.0)	0.82 (0.76–0.87)	<0.001	<0.001	-	18%₽
Sample size ≥500 ^{1, 2}	27 (61.4)	0.78 (0.73-0.85)	<0.001	<0.001	_ _	
Sample size ≥1,500 ²	21 (47.7)	0.80 (0.74–0.87)	< 0.001	<0.001	_	
Follow-up ≥10 years ^{1, 2}	32 (72.7)	0.78 (0.69–0.88)	< 0.001	< 0.001	_	
Follow-up ≥20 years ^{1, 2}	11 (25.0)	0.84 (0.74–0.95)	< 0.001	0.023	_	
Old population ≥60 years old ²	22 (50.0)	0.79 (0.69–0.90)	< 0.001	< 0.001	_	
Male population	19 (43.2)	0.87 (0.74–1.02)	0.085	0.007		-
Female population ^{1, 2}	9 (20.5)	0.70 (0.55–0.89)	0.004	0.012	_	
Study quality score ≥3 ²	30 (68.2)	0.82 (0.76–0.88)	< 0.001	< 0.001	_	
Fully controlled covariates ^{1, 2}	21 (47.7)	0.85 (0.79–0.92)	< 0.001	< 0.001	_ _	
Controlled negative affect ^{1, 2}	25 (56.8)	0.87 (0.81–0.93)	< 0.001	< 0.001	_ -	
Controlled social support ²	26 (59.1)	0.84 (0.78–0.91)	< 0.001	< 0.001	_	
Organizational activity ^{1, 2}	33 (75.0)	0.77 (0.71–0.83)	< 0.001	< 0.001	_ -	
Religious attendance (overall) ^{1, 2}	25 (56.8)	0.77 (0.71–0.84)	< 0.001	< 0.001	_	
Religious attendance (≥weekly) ^{1, 2}	14 (31.8)	0.73 (0.63–0.84)	< 0.001	< 0.001	_	
Church activity or attendance ²	7 (15.9)	0.79 (0.67–0.93)	0.004	0.076	_	
Non-organizational activity	4 (9.1)	0.95 (0.80-1.13)	0.58	0.027		
Intrinsic aspects	4 (9.1)	1.00 (0.89–1.12)	0.99	0.23		<u> </u>
Multi-dimensional aspects ²	3 (6.8)	0.55 (0.38–0.80)	0.002	0.63	•	
All-cause mortality ²	27 (61.4)	0.84 (0.78–0.90)	< 0.001	< 0.001	_ _	
Cardiovascular mortality ²	6 (13.6)	0.72 (0.58–0.89)	0.003	0.091	_	128% ↓
Cancer	5 (11.4)	0.76 (0.55–1.06)	0.10	0.17		
Respiratory disease	3 (6.8)	0.56 (0.31-1.01)	0.055	0.77 —	•	
Digestive disease	3 (6.8)	0.84 (0.28–2.80)	0.84	0.10	•	
				1		

⇒ Salutogenic effect of Religion



1: Cardiology. 1993;82(2-3):100-21.

Related Articles,

UniBasel GSFX

Factors predictive of long-term coronary heart disease morta among 10,059 male Israeli civil servants and municipal employees. A 23-year mortality follow-up in the Israeli Ischei Heart Disease Study.

Goldbourt U, Yaari S, Medalie JH.

Department of Epidemiology and Preventive Medicine, Sackler School o Medicine, Tel Aviv University, Israel.

Over 10.000 male civil servants and municipal employees in Israel, aged years and above, underwent an extensive clinical, biochemical, anthropometric, sociodemographic and psychosocial evaluation in 1963, and 1968. Follow-up for mortality was continued through 1986. Over 23 years, a number of previously established risk factors for coronary heart disease (CHD) incidence were found to predict mortality. The long-term follow-up assisted in illustrating temporal patterns. A single causal assessment of blood pressure retained high prediction for long-term mort: Blood lipids, while significantly associated with both coronary and all-ca mortality, exhibited a small contribution to the latter, when compared to hypertension, cigarette smoking habits and diabetes. Weak associations o long-term coronary mortality with the dietary intake patterns of fatty acid reported at baseline, were probably fully mediated by the effect of the die serum cholesterol. Religious orthodoxy appeared to provide a degree of immunity, part of which was independent of life-style correlates. A numb of now well-established associations in cardiovascular epidemiology were first demonstrated, or amplified, in the study. Patterns of ethnic diversity the risk factor and prevalence rates of CHD persisted, as viewed from the angle of mortality rates, over nearly a quarter of a decade, highlighting th enigma of a migrant country as a cardiovascular melting pot.

PMID: 8324774 [PubMed - indexed for MEDLINE]



Table 4. CHD and total mortality by smoking habits, diabetes and religious orthodoxy, 1963–1986

Smoking status	Cases	Morta	lity
		CHD	all causes
Never smoked	3,158	40	129
Quit smoking	1,677	51	151
Current smokers			
1-10 cigs/day	1,498	47	153
11-20 cigs/day	1,634	60	193
> 20 cigs/day	1,944	70	237
Cigar and pipe	141	72	164
Diabetics	479	149	357
Nondiabetics	9,580	50	162
Religious orthodoxy			
Most orthodox	2,103	38	135
Orthodox	1,528	51	162
'Traditional'	1,782	51	162
Secular	2,085	54	166
'Nonbelievers'	1,747	61	168

Rates are age-adjusted per 10,000 person-years of follow-up.



Fig. 7. Kaplan-Meier (above) and adjusted (below) life table curves by degree of religious orthodoxy: 23-year CHD mortality adjusted by age, SBP, total cholesterol, cigarette smoking, diabetes, OI and presence of CHD at baseline.

Car Ca Cator and

Jewisch orthodoxy as a protective factor

Blood Pressure Trend and Cardiovascular Events in Nuns in a Secluded Order: a 30-Year Follow-up Study

MARIO TIMIO, GIORGIO LIPPI, SANDRO VENANZI, SIMONETTA GENTILI, GIUSEPPE QUINTALIANI, CLAUDIO VERDURA, CLAUDIO MONARCA, PAOLO SARONIO AND FRANCESCA TIMIO

Department of Internal Medicine and Nephrology, Hospital of Foligno, Italy



BLOOD Pressure

For the Advancement of Hopertension Bowarch

Andersed by the

Religious life-style is cardioprotective !



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OWN STUDIES

Outcome of bypass surgery Cardiovascular reactivity Recovery from cardiac events





The Austrian Bypass-Study 1997

The Impact of Religiosity on the Outcome of Bypass Surgery

Center for Cardiovascular Medicine Hochegg (A)







The Austrian Bypass-Study 1997

The Impact of Religiosity on the Outcome of Bypass Surgery

Center for Cardiovascular Medicine Hochegg (A)

We examined **51 patients after bypass surgery** in the last 12 weeks. They completed a questionnaire assessing p.o. recovery, recent health status, religiosity and religious coping

50% used religiosity/spirituality to cope with heart surgery. Importance of religion and private prayer showed a significant relationship with postoperative recovery expressed by days of hosp., number of complications and health status.





Austrian Bypass-Study 1997



10

0

no

sometimes

often

regulary



... did somebody pray fo you?





Austrian Bypass-Study 1997

Correlations between religiosity, health, complications and LVF

religiosity and religious coping	health score	Nr. of complications	left ventricular function
How important is religion and religious belief for you?	0.314	447(*)	0.274
Do you consult God befor making important decisions?	0.213	-0.296	0.236
Do you pray privately, this means outside of church or services?	0.282	408(*)	.371(*)
How often do you go to church or visit a religious assembly?	0.294	-0.307	.350(*)
How activ are you within your church or congregation?	0.127	-0.309	0.149
Did your religious beliefs play a role in coping with heart surgery?	0.120	-0.217	0.220
Did you utilize pastoral care in preparing for heart surgery ?	0.186	-0.188	0.084
Did you pray yourself for heart surgery or healing?	.474(**)	-0.342	0.308

** Level of significance 0.01 (2-sided). * Level of significance 0,05 (2-sided)



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CV Reactivity Study 2008





- Important concept in psychosomatic medicine
- **Cardiovascular response** to mental (Stroop), social (TSST) and physical challenges
- Typical measures:
 - Heart Rate (HR) and Heart Rate Variability (HRV)
 - Blood Pressure (BP), Blood Pressure Variability (BPV)
 - Cardiac output (CO) and pre-ejection period (PEP)
- **CVR is a psychophysiological risk factor** for cardiovascular disease (Hypertension, CAD)
- Individual differences in CVR are determined by complex mechanisms (Lovallo et al. 2005)





Cardiovascular Reactivity (CVR)



Three level model

- **The fronto-limbic system** (cognitions and emotions)
- *Hypothalamus and brainstem* (regulatory centers, configure outputs to the body)
- **Peripheral Organs** (different response characteristic)

Lovallo et al. 2005

CVR and Religiosity





CV Reactivity Study 2008

Religion as a moderator of cardiovascular reactivity in patients with mild to severe depression

Master thesis of two psychologists at the University of Bern

- 40 inpatients with mild to severe depression
- Assessment of medical history and medications (cardiovascular and psychiatric)
- Assessment of Psychological Symptoms (BDI, SCL)
 Structure of Religiosity Test (S-R-T, Centrality)
- Mental stress testing (Color-Stroop)



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Structure of Religiosity Test

			Hauptfaktoren der Religiosität			
		Zentralität (→ Stärke)		Inhalt (→ Richtung)		
iosität	Intellekt	allgemeine Items (2-3)		Religiöse Suche:Reflexivität (3),(Quest-Konzept)Sinnfrage (1), Leidfrage (1), Suche (Selbstdefinition) (1)		
er Relig	ldeologie	allgemeine Items (2-3) + Reinkarnation + PSI-Glaube	(10-15)	Gottesbilder (9): atheistisch, apersonal, personal Theodizee (6): Plan, Strafe, Reifung, Gott leidet, Nachfolge, Beziehung Fundamentalismus: Soziale Strenge (3), Religiöse Abgrenzung (3), Moralischer Dualismus (3), Religiöser Absolutismus (3)		
onen de	Devotion	allgemeine Items (2-3) + Meditation	Zentralitätsskala	Ressourcen: Belastung: Positive Gefühle gegenüber Gott (9); Negative Gefühle gegenüber Gott (7); Skalen für bestimmte Gefühle: Skalen für bestimmte Gefühle: Vergebung (5), Dankbarkeit (2), Furcht (9), Hader (6),		
imensi	Erfahrung	allgemeine Items (2-3) + Einheitsefahrung +PSI-Erfahrung		Zentra	Verehrung (4), Geborgenheit (4) Schuld (5) Religiöses Coping: Gebet: Thema Hilfe (7) Erfahrung von Gottes Hilfe (5)	
Kernd	Ritus	allgemeine Items (2-3) + Rituale		Gemeinde als soziale Ressource (5)		



Prof. Stefan Huber

Praktische Theologie Speziell Empirische Religionsforschung

Uni Bern



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Huber 2008, 2012

Centrality of Religiosity Scale



Intellect	01: How often do you think about religious issues?
	ob. How interested are you in learning more about religious topics?
Ideology	02: To what extent do you believe that God or something divine exists? 07: To what extend do you believe in an afterlife—e.g. immortality of the soul, resurrection of the dead or reincarnation?
Public practice	03: How often do you take part in religious services? 08: How important is to take part in religious services?
Private practice	04: How often do you pray? 04b: How often do you meditate? 09: How important is personal prayer for you? 09b: How important is meditation for you?
Experience	05: How often do you experience situations in which you have the feeling that God or something divine intervenes in your life?10: How often do you experience situations in which you have the feeling that God or something divine wants to communicate to you?



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Centrality of Religiosity Scale





COLOR STROOP





Blood Pressure Reactivity





Blood Pressure Reactivity

Variable 1	Variable 2	n	Pearson	Sig.
Religiosity	Baseline SBP	37	r = .044	.398
Religiosity	Baseline DBP	37	r =033	.142
Religiosity	Stroop1 SBP	37	r =247	.070
Religiosity	Stroop1 DBP	37	r =310*	.031
Religiosity	Rec1 SBP	37	r =066	.350
Religiosity	Rec1 DBP	37	r =315*	.029
Religiosity	d BL-St1 SBP	37	r =460**	.002
Religiosity	d BL-St1 DBP	37	r =369*	.012
Religiosity	d BL-Rec1 SBP	37	r =266	.056
Religiosity	d BL-Rec1 DBP	37	r =587**	.000



Blood Pressure Reactivity

Aufgenommene/Entfernte Variableh

Modell	Aufgenomme ne Variablen	Entfernte Variablen	Methode
1	sex Geschlecht, age Alter		Eingeben
2	BDIeS1 BDI-Wert		Eingeben
3	RSTeS10 _a Zentralität		Eingeben

a. Alle gewünschten Variablen wurden aufgenommen.

 b. Abhängige Variable: DSt1SBD Reaktivität SBD Stroop1-BL

Result:

- Religiosity explains 25% of the blood pressure variance
- Age, sex and BDI explain less than 10% of the variance

						5			
						Änder	ungsstatistik	en	
			Korrigiertes	Standardf	Änderung in				Änderung in Signifikanz
Modell	R	R-Quadrat	R-Quadrat	Schätzers	R-Quadrat	Änderung in F	df1	df2	von F
1	.282 ^a	.079	.025	11.01234	.079	1.466	2	34	.245
2	282 ^b	.080	- 004	11 17704	000	005	1	33	.942
3	.503 ^c	.253	.159	10.22686	.173	7.417	1	32	.010

Mode IIzusamme nfassung

a. Einfluß variablen : (Konstante), sex Geschlecht, age Alter

b. Einfluß variablen : (Konstante), sex Geschlecht, age Alter, BDIeS1 BDI-Wert

c. Einfluß variablen : (Konstante), sex Geschlecht, age Alter, BDIeS1 BDI-Wert, RSTeS10 Zentralität









The Impact of Social Support and Religiosity on the recovery from acute cardiac events and heart surgery

Center for Cardiac Rehabilitation Barmelweid (CH)







The Impact of Social Support and Religiosity on the recovery from acute cardiac events and heart surgery

Center for Cardiac Rehabilitation Barmelweid (CH)

We examined **159 patients admitted to the CR Center** after acute cardiac events (MI) or heart surgery (bypass surgery). **Health related quality of life, exercise capacity, anxiety and depression, social support and R/S were assessed** on admission. QoL and exercise capacity also at discharge.

There was no difference between the diagnostic groups.





Correlations of social support and R/S with psychosocial and physical variables

	Anxiety (HADS-A)	Depression (HADS-D)	hr QoL (MacNew)	Exercise capacity (Cycle ergometer)
	n=159	n=159	n=140	n=136
Social Support (ESSI-D)	-0.XXX**	-0.XXX**	0.XXX*	0.054
Religiosity (CRS)	-0.089	-0.XXX*	0.XXX*	0.XXX*
Church attendance (CRS)	-0.XXX*	-0.116	0.XXX**	0.156
Search (SpREUK)	0.133	-0.066	0.007	0.156
Trust (SpREUK)	0.018	-0.113	0.109	0.11
Reflection (SpREUK)	0.176*	-0.062	-0.074	0.059

*p < 0.05; **p < 0.01

HADS-A, Hospital Anxiety and Depression Scale-Anxiety; HADS-D, Hospital Anxiety and Depression Scale-Depression; QoL, Quality of Life; MacNew, MacNew Heart Disease Health-related Quality of Life Questionnaire; 6MWT, 6-min walk test; ESSI-D, ENRICHD Social Support Inventory – German; CRS, Centrality of Religiosity Scale; SpREUK, Spiritual and Religious Attitudes in Dealing with Illness Scale.





Multiple regression models for the prediction of psychosocial and physical outcomes

Predictors	Anxiety (HADS-A) ¹	Depression (HADS-D) ¹	hr QoL (MacNew) ¹	Exercise capacity (Cycle ergometer) ⁴
Age	-0.07	0.101	0.XXX***	-0.115
Gender	0.082	-0.032	0.056	-0.163
Education level	-0.012	-0.07	-0.02	-0.036
Morbidity (CIRS)	0.138	-0.120*	-0.121	-0.XXX**
QoL (MacNew)	-0.16	-0.XXX***	-	0.XXX*
Anxiety (HADS-A)	-	0.XXX***	-0.141	0.218
Depression (HADS-D)	0.XXX***	-	-0.XXX***	-0.173
Exercise capacity (Cycle ergometer)	0.15	-0.074	0.152*	-
Social Support (ESSI-D)	-0.069	-0.XXX***	-0.XXX*	-0.053
Religiosity (CRS)	0.022	-0.05	-0.007	0.146
Adjusted R ² of the model	0.419	0.636	0.489	0.155

*p < 0.05; **p < 0.01, ***p < 0.001, ¹ Beta-coefficients





The Impact of Social Support and Religiosity on the recovery from acute cardiac events and heart surgery

Center for Cardiac Rehabilitation Barmelweid (CH)

Social support is negatively associated with anxiety and depression, positively associated with hr QoL and is negative predictor of depression after cardiac events (supports recovery).

Religiosity is negatively associated with depression (church attendance with anxiety) and positively associated with hr QoL and exercise capacity. But R/S is *not a predictor* neither of psychosocial nor of physical outcomes after cardiac events.



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CORONARY ARTERY DISEASE

Cardiovascular risk factors Impact of religion/spirituality Positive psychosocial factors







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Massimo F. Piepoli* (Chairperson)

Table 6Risk factor goals and target levels forimportant cardiovascular risk factors

Smoking	No exposure to tobacco in any form.
Diet	Low in saturated fat with a focus on wholegrain products, vegetables, fruit and fish.
Physical activity	At least 150 minutes a week of moderate aerobic PA (30 minutes for 5 days/week) or 75 minutes a week of vigorous aerobic PA (15 minutes for 5 days/week) or a combination thereof.
Body weight	BMI 20–25 kg/m ² .Waist circumference <94 cm (men) or <80 cm (women).
Blood pressure	<140/90 mmHg ^a
Lipids [™] LDL ^c is the primary target	Very high-risk: <1.8 mmol/L (<70 mg/dL), or a reduction of at least 50% if the baseline is between 1.8 and 3.5 mmol/L (70 and 135 mg/dL) ^d High-risk: <2.6mmol/L (<100 mg/dL), or a reduction of at least 50% if the baseline is between 2.6 and 5.1 mmol/L (100 and 200 mg/dL) Low to moderate risk: <3.0 mmol/L (<115 mg/dL).
HDL-C	No target but >1.0 mmol/L (>40mg/dL) in men and >1.2 mmol/L (>45 mg/dL) in women indicate lower risk.
Triglycerides	No target but <1.7 mmol/L (<150 mg/dL) indicates lower risk and higher levels indicate a need to look for other risk factors.
Diabetes	HbA1c <7%. (<53 mmol/mol)

Table 7Core questions for the assessment ofpsychosocial risk factors in clinical practice

Low socio- economic status	 What is your highest educational degree? Are you a manual worker?
Work and family stress	 Do you lack control over how to meet the demands at work? Is your reward inappropriate for your effort? Do you have serious problems with your spouse?
Social isolation	 Are you living alone? Do you lack a close confidant? Have you lost an important relative or friend over the last year?
Depression	 Do you feel down, depressed and hopeless? Have you lost interest and pleasure in life?
Anxiety	 Do you suddenly feel fear or panic? Are you frequently unable to stop or control worrying?
Hostility	 Do you frequently feel angry over little things? Do you often feel annoyed about other people's habits?
Type D personality	 In general, do you often feel anxious, irritable, or depressed? Do you avoid sharing your thoughts and feelings with other people?
Post- traumatic stress disorder	 Have you been exposed to a traumatic event? Do you suffer from nightmares or intrusive thoughts?
Other mental disorders	• Do you suffer from any other mental disorder?



Clinical Cardiology: New Frontiers

Impact of Psychological Factors on the Pathogenesis of Cardiovascular Disease and Implications for Therapy

Alan Rozanski, MD; James A. Blumenthal, PhD; Jay Kaplan, PhD

Abstract—Recent studies provide clear and convincing evidence that psychosocial factors contribute significantly to the pathogenesis and expression of coronary artery disease (CAD). This evidence is composed largely of data relating CAD risk to 5 specific psychosocial domains: (1) depression, (2) anxiety, (3) personality factors and character traits, (4) social isolation, and (5) chronic life stress. Pathophysiological mechanisms underlying the relationship between these entities and CAD can be divided into behavioral mechanisms, whereby psychosocial conditions contribute to a higher frequency of adverse health behaviors, such as poor diet and smoking, and direct pathophysiological mechanisms, such as neuroendocrine and platelet activation.

An extensive body of evidence from animal models (especially the cynomolgus monkey, *Macaca fascicularis*) reveals that chronic psychosocial stress can lead, probably via a mechanism involving excessive sympathetic nervous system activation, to exacerbation of coronary artery atherosclerosis as well as to transient endothelial dysfunction and even necrosis. Evidence from monkeys also indicates that psychosocial stress reliably induces ovarian dysfunction, hypercortisolemia, and excessive adrenergic activation in premenopausal females, leading to accelerated atherosclerosis.

Also reviewed are data relating CAD to acute stress and individual differences in sympathetic nervous system responsivity. New technologies and research from animal models demonstrate that acute stress triggers myocardial ischemia, promotes arrhythmogenesis, stimulates platelet function, and increases blood viscosity through hemoconcentration. In the presence of underlying atherosclerosis (eg, in CAD patients), acute stress also causes coronary

Circulation. 1999;99:2192-2217.

5-Year Survival after MI



Lesperance et al, Circulation 2002

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Network Open. Positive Psychosocial Factors (PPF)

Original Investigation | Public Health

Association Between Life Purpose and Mortality Among US Adults Older Than 50 Years

Aliya Alimujiang, MPH; Ashley Wiensch, MPH; Jonathan Boss, MS; Nancy L. Fleischer, PhD, MPH; Alison M. Mondul, PhD, MPH; Karen McLean, MD, PhD; Bhramar Mukherjee, PhD; Celeste Leigh Pearce, PhD, MPH

Abstract

IMPORTANCE A growing body of literature suggests that having a strong sense of purpose in life leads to improvements in both physical and mental health and enhances overall quality of life. There are interventions available to influence life purpose; thus, understanding the association of life purpose with mortality is critical.

OBJECTIVE To evaluate whether an association exists between life purpose and all-cause or causespecific mortality among older adults in the United States.

Key Points

Question Does an association exist between life purpose and all-cause or cause-specific mortality among people older than 50 years participating in the US Health and Retirement Study?

Findings This cohort study of 6985 adults showed that life purpose was





Cardiovascular Risk Factors

Religion and Spirituality modifie following factors (Koenig, Handbook)

• Biological and behavioral factors

- Risk factors
 - Less smoking (121 of 137 studies, 90%)
 - Lower cholesterol (12 of 21 studies, 52%)
 - Better blood pressure (36 of 63 studies, 57%)
- Protective Factors
 - More exercise (25 of 37 studies, 68%)

Psychosocial factors

- Risk Factors
 - Less hostility (23 of 35 studies, 66%)
 - Less Anxiety (147 of 299 studies, 49 %)
 - Less depression (272 of 444 studies, 61%)
- Protective Factors
 - More optimism and hope (55 of 72 studies, 76%)
 - Better social support (61 of 74 studies, 82%)



Blood Pressure Trend and Cardiovascular Events in Nuns in a Secluded Order: a 30-Year Follow-up Study

MARIO TIMIO, GIORGIO LIPPI, SANDRO VENANZI, SIMONETTA GENTILI, GIUSEPPE QUINTALIANI, CLAUDIO VERDURA, CLAUDIO MONARCA, PAOLO SARONIO AND FRANCESCA TIMIO

Department of Internal Medicine and Nephrology, Hospital of Foligno, Italy





A religious lifestyle is also antihypertensive !

Do Positive Psychosocial Factors and Religion contribute to the Prediction of Coronary Artery Disease?

University Hospital Basel, Switzerland





Spiritualität und Gesu



The Research Team









Core Team

- Prof. R. Schäfert
- Prof. G. Meinlschmidt
- S. Guemghar PhD
- Dr. R. Hefti MD









Experts

- Prof. Ch. Müller
- Prof. E. Battegay
- Dr. B. Stieltjes MD
- Prof. H. Koenig



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Background

Several studies show an association of positive psychosocial factors and religiosity with coronary artery disease. Previous studies are limited in the number of assessed variables, in the size of the cohort and in the outcome data.

Aim of the Study

This study explores the potential of integrating positive psychosocial factors (happiness, satisfaction with health and life, and social support) and religiosity (religious activity) in conventional and machine learning - based prediction models using in a big population-based cohort.



- Universitätsspital Basel





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The UK Biobank



The UK Biobank is a large-scale biomedical database and research resource, containing in-depth genetic and health information from half a million UK participants.

Structure of the UK Biobank





Forschungsinstitut für

Spiritualität und Gesundheit

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Methods

- We are using data of 475'198 UK biobank participants without CAD at baseline assessment
- We calculated associations of positive psychosocial factors (happiness, satisfaction with health and life, and social support) and "religiosity" (religious group activity) with cardiovascular endpoints AMI and CIHD
- Then, we built logistic regression and XGBoost prediction models using psychosocial, behavioral biological and sociodemographic variables
- We compared our models with the **Framingham score**. Model performances were assessed using AUC-ROC



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Preliminary results

- We found **several associations** of positive psychosocial factors (satisfaction with health and life, social support) with AMI and CIHD. No association was found for happiness and religious group activity.
- In the **total predictive model** positive psychosocial factors didn't add predictive power (accuracy) to the Framingham score neither in the logistic regression nor in the XGBoost (machine learning) approach.



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Discussion

There are **relevant limitations**:

- First PPF's assessed at initial visits in the UK Biobank cohort are limited. Best documented PPF's as wellbeing, optimism, purpose in life and religiosityspirituality (Chida et al., 2008; Kim et al.; Cohen et al., 2016) are not captured.
- Second: there is a high proportion of missing values for some of these PPFs (up to 66%) and the incidence of cardiovascular events and disease is low (1.3%/3.8%) in the present cohort.

Therefore, a **final conclusion on the predictive and preventive potential of positive psychosocial factors can't be drawn** from the present study. Further research is needed to clarify their role in preventive cardiology and future guidelines.



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QESTIONS AND DISCUSSION

Thank you for your attention rene.hefti@rish.ch

