Title of the project	**Social Activities And Possible Dementia Among The Elderly In Three Indonesian Communities**
Conducted by	Center for Health Research University of Indonesia, Oxford Institute of Ageing, and Loughborough University
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Background

On the basis of previous analyses conducted on data from three Indonesian sites (West Java, Central Java and Jakarta), 39% of elderly were found to self-report memory problems (Rahardjo, 2007). Data also suggested that most of the elderly rated their overall health as excellent (75%) and that only 9% reported that their physical or mental health problems significantly interfered with their social activities.

The aim of this project was to investigate whether social activities were associated with cognitive impairment/possible dementia in elderly participants of the three Indonesian communities.

Methods

This cross-sectional study had been carried out in 3 areas, two rural (Borobudor near Yogyakarta and Citengah near Sumedang) and one urban (Jakarta) district among mainly Javanese and Sundanese elderly (n=791, 52-98 years of age) between April-June 2006 (Jakarta) and December 2006-February 2007. Dementia risk was assessed using an algorithm developed on the basis of data from the Oxford Project To Investigate Memory and Ageing using the Mini-Mental Status Examination and a memory test (Hogervorst, 2002). Self report of (social) activities was assessed by questionnaire. In 40% of possible cases and controls, these answers were corroborated by an accompanying carer.

Results

Of 719 elderly, 24% was deemed to be at risk for cognitive impairment/possible dementia on the basis of cognitive test performance, while 30% scored above the cut-offs of the algorithm. Taking into account impaired activities of daily life and no other morbidity to explain cognitive impairment, the percentage of people possibly afflicted with primary dementia would be around 4-6% in this cohort.

Frequency of engaging in different activities for possible cases (1.00) and controls (.00) on the basis of the cognitive algorithm is shown in figure 1, with '0' referring to 'I never do.. activity' and '5' to 'I always engage in..activity'

Fig 1. Frequency of engagement in different activities in cases and controls

HVLT lt 14.5 and MMSE lt 24.5 (controls HVLT ge 24.5
Error bars: 95% CI
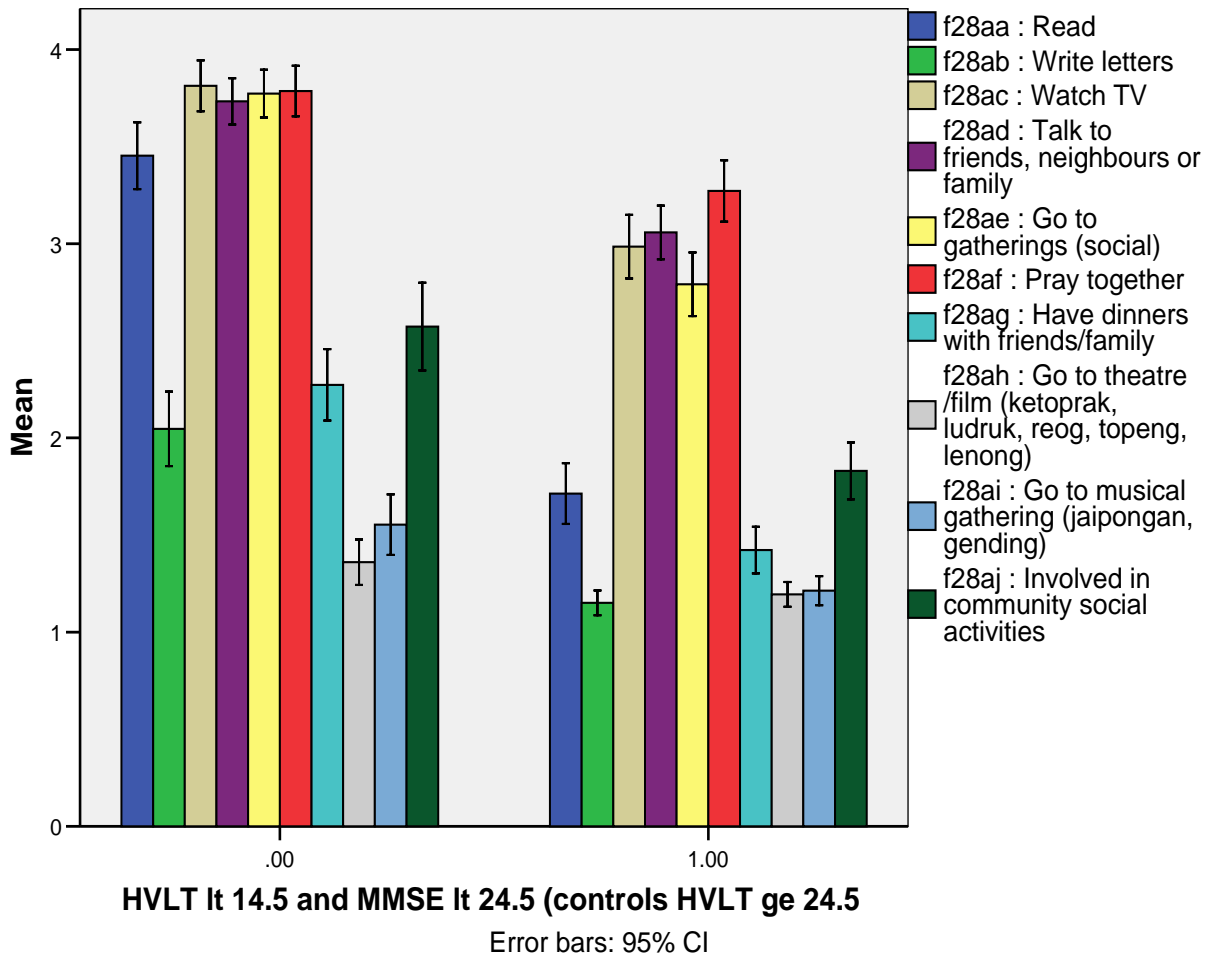
For logistic regression analyses only risk based on the cognitive cut-offs was employed, including n=384 in the analyses. Results of multivariate stepwise backward analyses are shown in table 1. An older age was associated with a higher risk (a 10% increase for each year of age), while having had more education was associated with a lower risk, Reading, writing, talking with others, attending social gatherings, and being involved in community social activities were all independently associated with a 28-55% reduction in risk. While this was not apparent in the raw data (fig 1), the model also showed that praying together with others was independently associated with a 64% increase in risk for cognitive impairment/possible dementia. Watching TV, going to the theatre or film, attending musical gatherings or dinners with friends and family were excluded from the analyses.

Discussion
Results suggest that participants with possible dementia/cognitive impairment engage in fewer social activities, although not all mentally engaging activities were associated with a reduced risk. This was possibly the case because the frequency of some of these activities was quite low in this population (mean frequency 'almost never' for going to theatre/film, musical performances etc.). It is unclear why praying together was associated with increased risk in the model but not in the raw data and this needs to be further investigated. The findings of age and education are similar to those in other cohorts (Hogervorst, 2002).

In the present study the direction of cause and effect are unclear. Ergo, people may not participate in social activities *because* of reduced cognitive ability. On the other hand many animal studies have shown that an

enriched environment can positively stimulate dendrite outgrowth, even in older rats (Diamond, 1964) which would increase protective resources and through this might decrease dementia risk in humans. In addition, longitudinal observational studies (e.g. the Nun study in Kentucky) have also reported that having hobbies and engaging in mental activity (before onset of morbidity, including dementia symptoms) was associated with lower mortality, better mental health and less risk of dementia (Snowdon, 2000; Riley, 2005; Briones, 2006),

We conclude that mental and social activities might have a significant contribution in preventing cognitive impairment and possible dementia. Further studies that investigate these association in more detail are needed.

Table 1. **Variables included in the Logistic Regression Equation**

		B	S.E.	Wald	df	Sig.	O.R.	95.0% C.I.for EXP(B)	
								Lower	Upper
Step 1(a)	SEX	-.765	.412	3.446	1	.063	.466	.208	1.044
	AGE	.098	.028	12.624	1	.000	1.103	1.045	1.164
	EDUCATION	-1.110	.159	48.622	1	.000	.330	.241	.450
	reading	-.335	.168	3.991	1	.046	.715	.515	.994
	writing	-.563	.270	4.355	1	.037	.570	.336	.966
	talking	-.466	.207	5.068	1	.024	.627	.418	.941
	gatherings	-.783	.205	14.641	1	.000	.457	.306	.683
	praying together	.496	.220	5.063	1	.024	1.642	1.066	2.529
	community social activities	-.419	.168	6.203	1	.013	.658	.473	.915
	Constant	3.115	2.456	1.609	1	.205	22.527		

a Variable(s) not entered on step watching tv, going to theatre/film, musical gatherings, having dinners with fam/friends

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