

Handedness and physical health problems among elderly rural population

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ABSTRACT

The objective of this study was to find relationship between handedness and physical health problems among elderly male and female population of rural areas. The sample consists of 55 male and 55 female from rural areas. The mean age of the subjects was 57.07 years with S.D 8.51. Self reported hand preference was used as a measure of handedness. To measure the health problems of the participants a modified version of Health Problem questionnaire by Geschwind and Behan (1982) was used. Each participant was tested individually. Physical health problems like blood pressure, heart disease, migraine, back-pain, headache and vomiting (during journey) are more common in elderly female than elderly male. Smoking and ulcers are more common in elderly male than elderly female. Heart disease and numbness in body parts is more common in left handers compared to right handers.

Key Words : Handedness, Physical Health Problem, Elderly Rural Population

INTRODUCTION

The English word 'sinister' comes from the Latin word for left. There are various theories related to handedness. Genetic theorists (Levy and Nagylaki, 1972; Annett, 1978, 1979, 1981, 1985, 1994, 1998; McManus, 1985, 1985b, 1985c, 1998 and McManus *et al.*, 1999) say that there is gene for handedness and many studies support this model but the results of monozygotic twin studies goes against this model. Hormonal theorists (Geschwind and Galaburda, 1987) say that male hormone –testosterone, play an important role in the determinant of handedness while pathological model (Satz, 1972, 1973) says that it is due to the birth stress and other problems during pregnancy and birth. But all these theorists give credits to the social and cultural pressure in the use of hand preference. Handedness is also explained in terms of learning. Collins (1970) argued that handedness is transmitted from one generation to next through cultural and environmental bases. The recent advancement in explaining handedness in terms of environmental factors has taken place in Gene-Culture model of handedness (Laland *et al.*, 1995). It tends to explain that handedness is only a facultative trait (effected by genes), which, unlike genetic models explanation, has no underlying genetical variation. The variations in handedness are mainly determined by the developmental and cultural factors. With the invention of new techniques for study of human body it can be assumed that in the recent future there will be a universal theory of handedness and brain asymmetry.

There exist many studies of the incidence of left-handedness in diverse cultures. Seddon and McManus (1993) have reviewed 100 such studies and concluded that the world wide evidence of left-

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handedness is 8.75%, with a significant sex difference but no cultural effect. In contrast, Dawson (1977) has argued that the incidence of left-handedness is high in those cultures in which parent-child relationship is highly permissive, such as the Alaskan Inuit, and very low in those cultures in which parent-child relations are authoritarian such as the Hong Kong Boat people. Other data suggest that the incidence of left-handedness is particularly low among Orientals (Teng *et al.*, 1976; Porac *et al.*, 1990). There are nearly 5% left handers in Indian population (Singh & Bryden, 1994; Singh & Manjary, 1995; Singh *et al.*, 2001). While there were 6.5% left hander among rural illiterates and the ratio between male and female left hander was approximately 2:1 (Singh, 2011). While there were 6.2% left hander in Muslim population (Singh and Qureshi, 2011).

Because of the way our brains are cross-wired to our bodies, left-handers think differently and do things differently to right-handers and this can have some strange impacts on our health. Left handers are better at reading Braille as it reports to the right hemisphere - better at spatial intelligence patterns. The right ear is better at processing language. It is thought that changing a natural left-hander to a right hander may cause stuttering. King George VI was a well known case of this. It is still thought that there is a common link between left-handedness and speech defects. Some left-handers slip unintentionally into mirror writing. Two famous practitioners were Lewis Carroll and Leonardo da Vinci.

Left-handedness has been found to be linked to many disorders including three leading causes of death in western societies, alcoholism, smoking and breast cancer (London, 1989) as well as to several neurological and immune disorders and reading disability (Geschwind & Behan, 1982). Left-handedness has been found more in proportion among mentally retarded and schizophrenia clinical population as compared to the proportion of left handers in normal population (Coren, 1992). Left-handedness has also been associated with shortened lifespan and sleep apnea (Hoffstein, et al. 1993), attention deficit disorder (Comings and Comings, 1987), cognitive deficits in development of Alzheimer's disease (Doody *et al.*, 1999), and homosexuality (Bailey, 1999). In addition, left-handers are more likely to die younger, have higher injury rates in sports, as well as while driving (U.S. News and World Report, 1993).

There are few studies in India that have explored relationship of handedness with physical disorders. Moreover, no prior study has focused relationship between handedness and disorders in an aged and rural population. Thus, in present study researcher has attempted finding the relationship of handedness with physical health problems of old age rural population. Study of difference between male and female in occurrence of physical health problems is an additional objective of the study. It was hypothesized that left handers are likely to have more health problems compared to right handers.

METHODOLOGY

Sample :

In this study researcher select 110 subjects from Gokalpur, Kinanagar, Kandra, Datawali Villages of Baghpat district of UP, India. Out of which 55 were old age male and 55 were old age female. Researcher tried to include all section of society. The mean age of the respondents was 57.07 years with S.D. being 8.51 .

Tool used:

Self reported hand preference was used as a measure of handedness. To measure the health problems of the subjects a modified version of Health Problem Questionnaire by Geschwind and Behan (1982) was used. The questionnaire has 20 items of "yes or no" type related to general health problems like allergies, diabetes, blood pressure, smoking, chewing fingernails, ulcers, migraine, headache, jaundice, vomiting problem, difficulty in learning to read and talk, broken bone, typhoid

fever, and numbness .

Procedure of data collection:

Each participant was tested individually. To confirm the self-reported handedness, subjects were asked some questions like ‘which hand you uses for -eating, holding heavy items, picking hammer, slapping’. To measure various health problems, items of Health Problem Questionnaire were read loudly in Hindi and response of the subjects for each item was recorded by the researcher. In addition to this medical report, doctor prescription or consent of family members was also recorded to confirm the authenticity of response of subjects. Subjects were also asked information regarding their age, sex, birth order, no. of brother and sister, any left hander in family etc. The responses of the subjects were marked on the response sheet.

RESULTS AND DISCUSSION

The data was analyzed using the SPSS program. Because of normative nature of the data Chi-square method was used to test the hypotheses.

Table 1 : Chi- square analysis between gender and blood pressure response				
		Blood pressure		Total
		Yes	No	
Gender	Male	03	52	55
	Female	11	44	55
Total		14	96	110
		Value	df	Asymp. Sig.
Chi-Square		5.238*	1	.022

* Value is significant at 0.05 level of significance

Table 2 : Chi- square analysis between gender and heart disease response				
		Heart disease		Total
		Yes	No	
Gender	Male	02	53	55
	Female	10	45	55
Total		12	98	110
		Value	df	Asymp. Sig.
Chi-Square		5.986*	1	.014

* Value is significant at 0.05 level of significance

Table 3 : Chi- square analysis between gender and smoking response				
		Smoking		Total
		Yes	No	
Gender	Male	53	02	55
	Female	33	22	55
Total		86	24	110
		Value	df	Asymp. Sig.
Chi-Square		21.318*	1	.000

* Value is significant at 0.05 and 0.01 level of significance

Analysis shows that proportionately more female have higher blood pressure ($\chi^2=5.24, p = .022$), heart diseases ($\chi^2=5.98, p = .014$), migraine ($\chi^2=9.35, p = .002$), back pain ($\chi^2=16.0, p = .001$), headache ($\chi^2=6.71, p = .01$) and vomiting during journey ($\chi^2=8.8, p = .003$) compared to male. Whereas proportionately more male have smoking habits ($\chi^2=8.8, p = .003$), ulcers ($\chi^2=8.8, p = .003$), and

Table 4 : Chi- square analysis between gender and ulcer response

		Ulcer		Total
		Yes	No-	
Gender	Male	22	33	55
	Female	11	44	55
Total		33	77	110
		Value	df	Asymp. Sig.
Chi-Square		5.238*	1	.022

* Value is significant at 0.05 level of significance

Table 5 : Chi- square analysis between gender and migraine

		Migraine		Total
		Yes	No	
Gender	Male	01	54	55
	Female	11	44	55
Total		12	98	110
		Value	df	Asymp. Sig.
Chi-Square		9.354*	1	.002

* Value is significant at 0.05 and 0.01 level of significance

Table 6 : Chi- square analysis between gender and difficulty in learning to read

		Difficulty in learning to read		Total
		Yes	No	
Gender	Male	05	50	55
	Female	00	55	55
Total		05	105	110
		Value	df	Asymp. Sig.
Chi-Square		5.238*	1	.022

* Value is significant at 0.05 level of significance

Table 7 : Chi- square analysis between gender and back pain

		Back pain		Total
		Yes	No	
Gender	Male	18	37	55
	Female	39	16	55
Total		57	53	110
		Value	df	Asymp. Sig.
Chi-Square		16.058*	1	.000

* Value is significant at 0.05 and 0.01 level of significance

difficulty in learning to read ($\chi^2=5.24, p=$) compared to female.

Moreover, proportionately more left-handers reported heart diseases ($\chi^2=5.07, p= .024$) and numbness in body parts ($\chi^2=6.97, p= .008$) compared to right-handers.

Table 8 : Chi- square analysis between gender and headache				
		Headache		Total
		Yes	No	
Gender	Male	13	42	55
	Female	26	29	55
Total		39	71	110
Chi-Square		Value	df	Asymp. Sig.
		6.714*	1	.010

* Value is significant at 0.05 and 0.01 level of significance

Table 9 : Chi-square analysis between the gender and vomiting				
		Vomiting		Total
		Yes	No	
Gender	Male	04	51	55
	Female	16	39	55
Total		20	90	110
Chi-Square		Value	df	Asymp. Sig.
		8.800*	1	0.003

* Value is significant at 0.05 and 0.01 level of significance

Table 10 : Chi- square analysis between handedness and heart disease				
		Handedness		Total
		Left	Right	
Heart disease	Yes	03	09	12
	No	06	92	98
Total		09	101	110
Chi- square		Value	df	Asymp. Sig.
		5.071*	1	.024

* Value is significant at the 0.05 level of significance

Table 11 : Chi- square analysis between handedness and numbness				
		Handedness		Total
		Left	Right	
Numbness	Yes	03	07	10
	No	06	94	100
Total		09	101	110
Chi- square		Value	df	Asymp. Sig.
		6.970*	1	.008

* Value is significant at the 0.05 and 0.01 level of significance

Blood pressure, heart disease, migraine, back-pain, headache and vomiting during journey are more common in elderly female subjects while smoking, ulcer, difficulty in learning to read are more common in elderly male subjects. In contrast to general assumption (Coren, 1990, 1992), only heart disease and numbness in body or its part was found to be significantly different in left and right handers. Both these health problems were more common in left handers than the right handers. While Handedness was not found significantly differ with allergy, diabetes, chewing finger nail, blood pressure, smoking, ulcer, migraine, grind teeth, difficulty in talking, difficulty in reading, typhoid fever, back pain, headache, Jaundice and vomiting during journey.

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