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ANNOYANCE AND MENTAL HEALTH STATUS OF PEOPLE AROUND AN AIRPORT IN JAPAN

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ABSTRACT
Association between the annoyance from noise and some personal factors was investigated around an airport. Annoyance of residents was surveyed with the questionnaire comprising scales for anxiety and depression and levels of annoyance from environmental noises. Though the association between aircraft noise and mental state was not detected, significant increases of the level of anxiety and depression were observed among people who experienced life events such as psychosocial stressor within a year. Moreover, these mental states also revealed the significant correlation with annoyance from noise. This result suggests that the mental state disturbed by personal life events may increase susceptibility and annoyance from environmental noise.

1 - INTRODUCTION

The purpose of this study is to investigate association between annoyance and mental states, various factors and noise exposure. The study is part of between aircraft noise exposure and health status program designed to determine whether there are reliable associations between aircraft noise exposure and mental state. Aircraft noise is one of the frequent causes of mental health in a community. However, there was no strongly association between mental state and aircraft noise. There are involved various factors. Annoyance is one of then. Annoyance is thought to be the most widespread psychological response to environmental noise. Annoyance reactions are sensitivity to many non-acoustical factors of social, psychological or economic nature, and there are also considerable differences in individual reactions to the same noise [1]. S.A. Stansfeld said, Men with noise sensitivity were more likely to be highly annoyed by noise exposure than men with less noise sensitivity [2]. Moreover, noise sensitivity people attend more to noises, discriminate more between noises, find noises more threatening and out of their control, and react to, and adapt to noise more slowly than less noise sensitivity people [3]. On the other hand, Apart from annoyance, people may feel a variety of negative emotions when exposed to community noise, and may report anger, disappointment, dissatisfaction, withdrawal, helplessness, depression, anxiety, distraction, agitation, or exhaustion [4]. In this paper designed to whether there are reliable associations between annoyance and mental state.

2 - SUBJECTS AND METHODS

Data from 390 women were analyzed. Subjects were divided into three groups by dwelling areas. Two groups of the three are of the residents in two special zones where public cares are provided by low. The zones are legally defined with aircraft noise levels. Zone I is approximately 15 WECPNL larger than that in II on average. The third group of examinees is the dweller in the area out of the two zones. The questionnaire includes a general question about the subjects' health and several questions about reactions to the environment. The health measure comprised the anxiety and depression scale. The anxiety and depression scale was used to asses the presence of psychiatric disorder; it was devised Goldberg [5]. The environment measure comprised questions on annoyance relating noise. Noise is often defined, as

'unwanted sound' perceived as unpleasant. The Japanese expression "urusai" for noisy situation also means a typical Japanese expression for noisy circumstances contains also meaning of annoyance. We designed the questionnaire on annoyance with some modifications to discount the effect of ambient noise [6]. Life events and psychosocial stressors are synonymous. It was that asked whether it experienced within the past one-year. Analysis was performed with statistical program package SAS and SPSS on a personal computer.

3 - RESULTS AND DISCUSSION

Table 1 shows the result from Analysis of variance (ANOVA). The level of Annoyance was higher in High Aircraft noise-group than in Low Aircraft Noise-group on average. However, as for mental state, there were no differences in the three groups.

	Aircraft noise level			P value for tests
	Low	Middle	High	
Anxiety	1.4 ± 2.4	1.3 ± 2.4	1.5 ± 3.1	n.s
Depression	1.3 ± 2.2	1.4 ± 2.2	2.1 ± 2.8	n.s
Annoyance	13.1 ± 3.6	14.3 ± 3.7	15.3 ± 2.9	P<0.001
Highly annoyed	11.1 %	23.1 %	43.8 %	P<0.001
				Mean ± STD

Table 1: Result of to comparison aircraft noise area.

Table 2 shows the result from Spearman's correlation coefficients analysis. The correlation between mental state levels and annoyance was statistically significant. However, The correlation between aircraft noise level and Mental State levels were not positive with statistical significance. The multi-regression analysis for mental state revealed that the contributors with statistical significance are not the air craft noise levels but the dissatisfaction to ambient noise and social support levels of residents. On the other hand, The result from comparative analysis on people with or without experience of life events two groups. It was found that the level of mental state such as anxiety and depression, and annoyance was higher in experienced life events than not experienced, on average. Therefor, the anxiety and depression were increased by to experience of life events. The mental state levels are associated with noise annoyance, rather than with noise exposure. These results may indicate it about two factors. One is aircraft noise exposure did not lead to mental state. Another one is annoyance led to mental state. Noise is often defined, as 'unwanted sound' perceived as unpleasant. These results may appear simplified annoyance increased mental state levels, i.e. the only person who is annoying affected mental state. However, It is likely that experienced life event as psychosocial stressors affected mental state. And the mental state increased annoyance. It thought that mental state influence on annoyance from our past investigation. These high mental state groups maybe become a people highly sensitive to noise [7,8,9]. It is reasonable to suppose that a sample from general population includes this sensitized group and influenced people by the noise. The present study shows that the mental state increased annoyance. From this point we might go on to an even more detailed examine of adverse effect of aircraft noise.

	Aircraft noise level (WECPNL)	Annoyance	
Anxiety	0.013 n.s	0.158	P<0.01
Depression	0.016 n.s	0.131	P<0.05
Annoyance	0.194 P<0.01	-	-

Table 2: Spearman's correlation coefficients.

	Life Events		P value for tests
	Experience	Dose not Experience	
Anxiety	2.3 ± 2.9	0.8 ± 1.9	P<0.001
Depression	2.2 ± 2.6	1.0 ± 2.0	P<0.001
Annoyance	14.7 ± 3.9	13.6 ± 3.6	P<0.05
% Highly annoyed	26.2 %	15.9 %	P<0.05
			Mean ± STD

Table 3: Result of comparison experience of life events.

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REFERENCES

1. **WHO**, *GUIDLINE for COMMUNITY NOISE*, WHO, 1999

2. **S.A. Stansfeld, D. Sharp and al.**, Road Traffic Noise, Noise Sensitivity and Psychological Disorder.*Noise and Disease*, pp. 179-188, 1993

3. **Stephen A. stansfeld**, *Psychological Medicine*, Cambridge University Press, 1992

4. **WHO**, *GUIDLINE for COMMUNITY NOISE*, WHO, 1999

5. **D. Goldberg, K Bridges and al.**, Detecting anxiety and depression in general medical settings, *BMJ*, Vol. 297, pp. 897-899, 1988

6. **Kyoichi Goto, Tetsuya Kaneko and al**, Design of scale for subjective value of living environment and relating factors.In *Proc. Society environment Science*, 1997

7. **Kyoichi Goto, Tetsuya Kaneko**, Subjective value of living environment and relating factors; social support, personality and mental state.In *Proc. Japan Society of Health Sciences*, pp. 98-99, 1993

8. **Kyoichi Goto, Tetsuya Kaneko and al**, Environment evaluation, mentality measure and the relevance of Life Events, In *Proc. Japanese Society of Public Health*, 1994

9. **Kyoichi Goto, Tetsuya Kaneko**, Subjective value of living environment and relating factors; associations between personality, mental state and noise sensitivity. *The Journal of aviation environment research.*, Vol. 1, pp. 43-50, 1997