

Survey activity for prevention heat stroke 2023 in Osaka.

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【background】

The 2003 European heat wave hit several countries. France was hit especially hard and the number of heat-related deaths exceeded 10,000. Osaka is one of cities with higher average temperature in Japan. We thought that heat stroke deaths would increase in Osaka in the future as global warming progress. In 2004, Osaka Federation of Democratic Medical Institute (Osaka MIN-IREN) began visiting activities in an effort to reduce the number of heat stroke victims. Activities include staff visiting the home of people considered to be at high risk of heat stroke. For the first 10 years or so of its activities, our staffs had visited subjects in their homes, measured in-room and outside temperature, handed over fans and water, asked if there was anything to need help or problem. For example, was the air conditioner (A/C) broken, were they able to pay the electricity bill, did they know how to operate A/C.

However, an elderly couple who were thought to have died of heat stroke a few days after the staff visited them. We have learned from this incident to believe that heat stroke cannot be prevented by visits alone. High temperature, main cause of heatstroke, is equal for everyone. But social inequality exists in measures against heatstroke, such as ability to expenditure for A/C and high electricity cost, physical ability to go outside to cool place, literacy for heatstroke prevention. Therefore, a major role of the activity was to ask about the factors that lead to heat stroke, compile the data, and disseminate the information to society. Since it was considered an important activity for staff to visit the homes of local residents to learn about their housing environment, lifestyle behavior, and difficulties, we decided to conduct the survey annually. And it seems likely that this survey also contained selection bias and other factors that we are unaware of. Therefore, we thought that we could improve the survey by adding or deleting questions each year when planning the survey.

In the summer of 2020-22, visiting activities were significantly restricted due to the COVID-19 pandemic. It has been determined that close-quarters interviewing method may contribute to the spread of COVID-19. And it is said that in interviews, especially among Japanese respondents, there is a tendency to try to read how the questioner wants the answer from the content of the question, rather than giving their own opinion. Therefore, when we resume the survey in 2023, there were concerns that the response rate would drop significantly, but we decided to switch from interviews to self-administered survey.

We obtained approval from the research ethics committee of Mimihara general hospital (Approval No. 202304-1-1). Nishiyodo hospital, Coop Osaka hospital and Higashiosaka seikyo hospital had affirmed the result of the ethics review.

【objectives】

The objectives of the annual survey are to 1) extract factors of heat stroke that we, the staff, can be used for, 2) gain experience of the staff in ascertaining the circumstances of local residents and listening to their complaints, 3) disseminate survey results to society every year. This poster will report survey results.

【Methods】

Subjects are local residents who are considered to be at high risk.

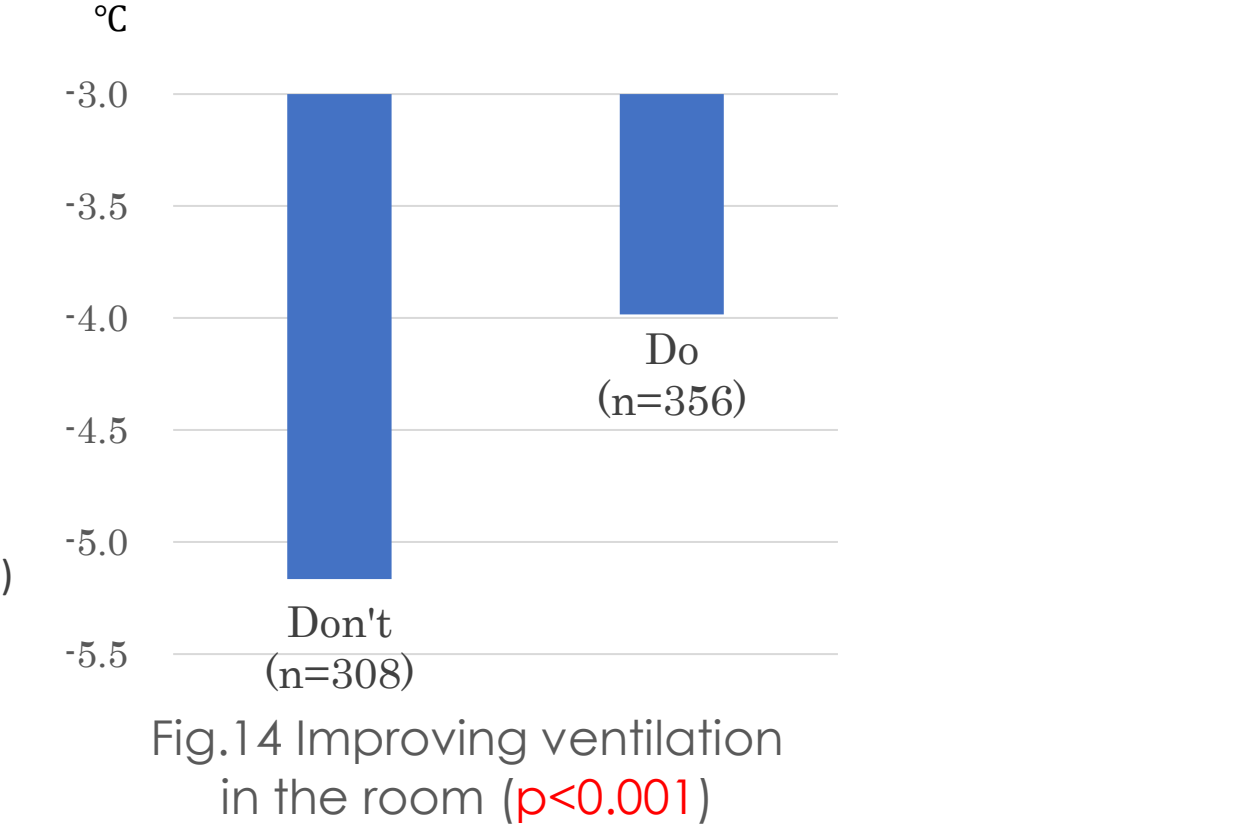
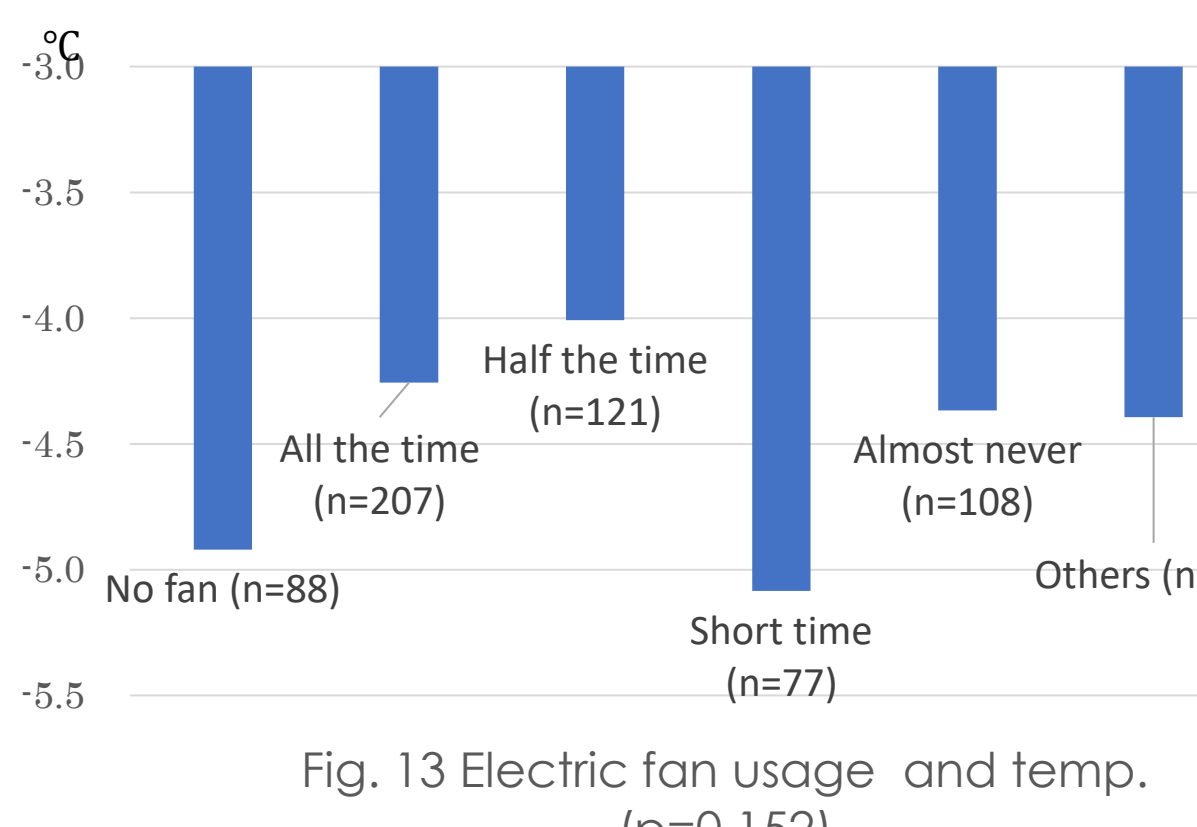
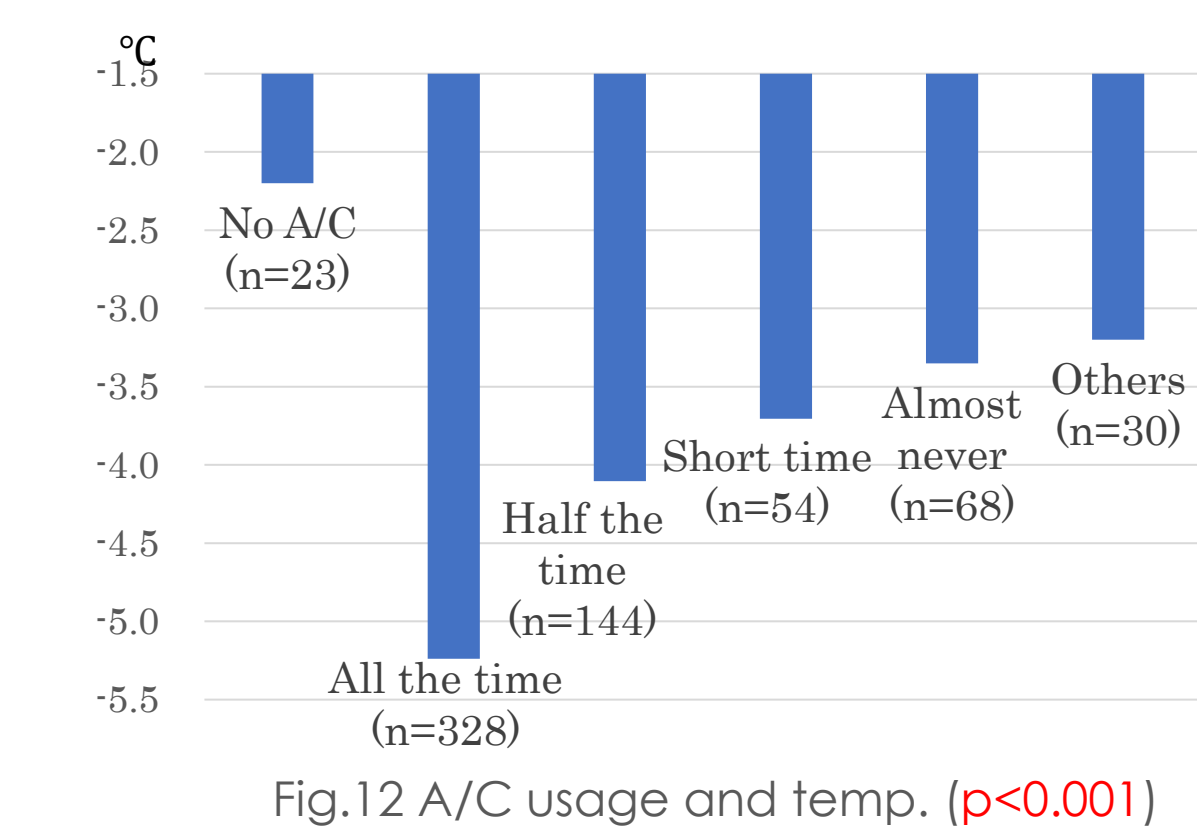
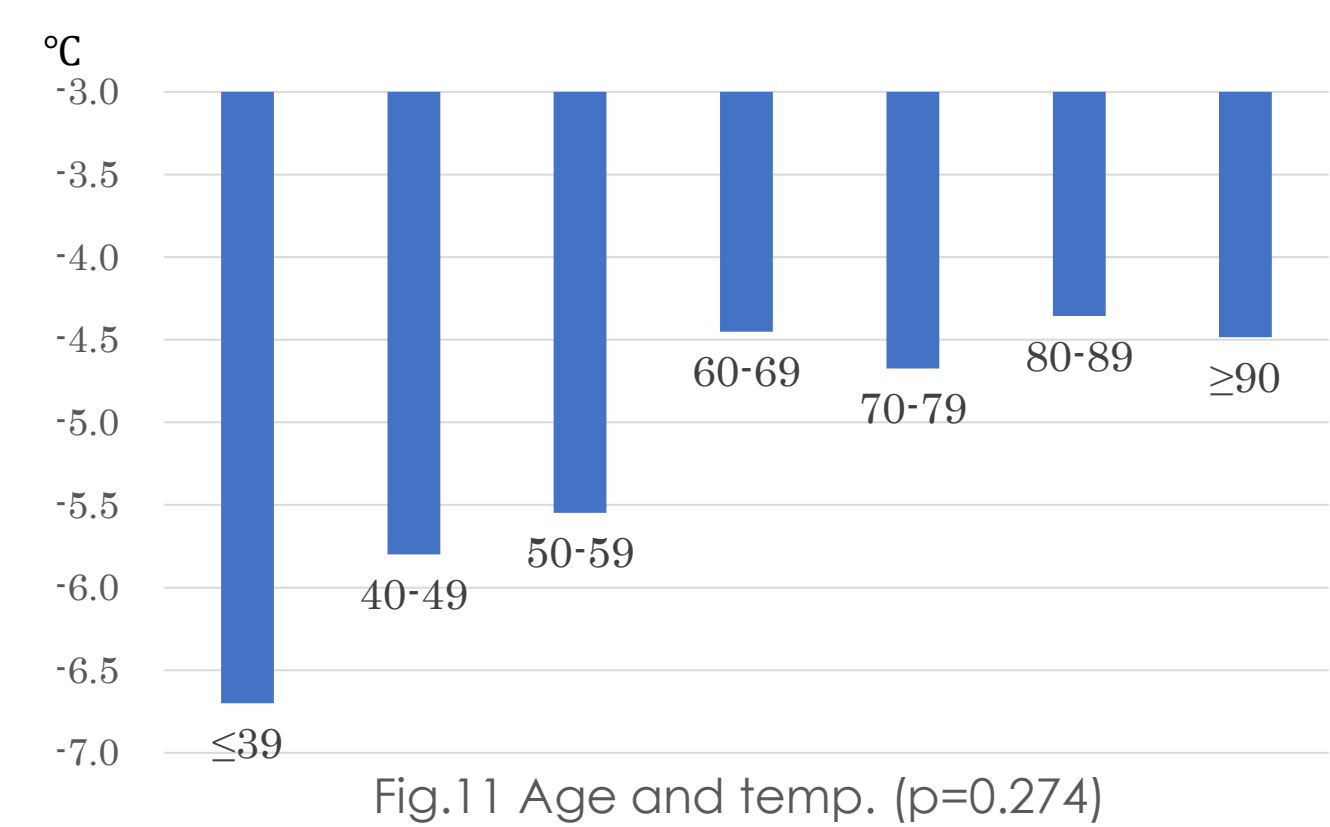
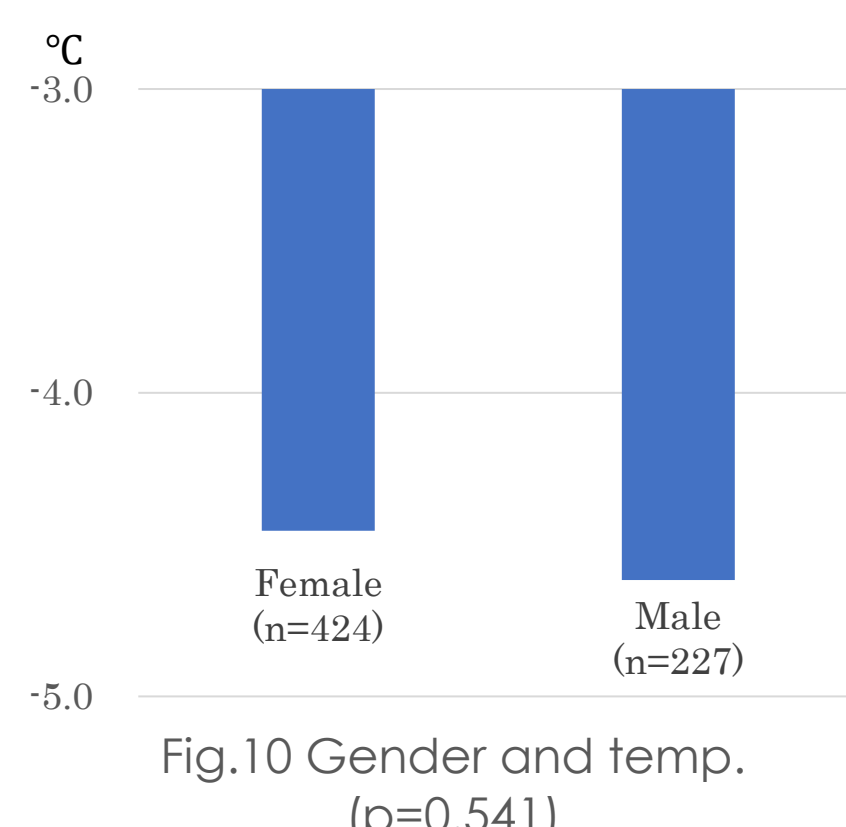
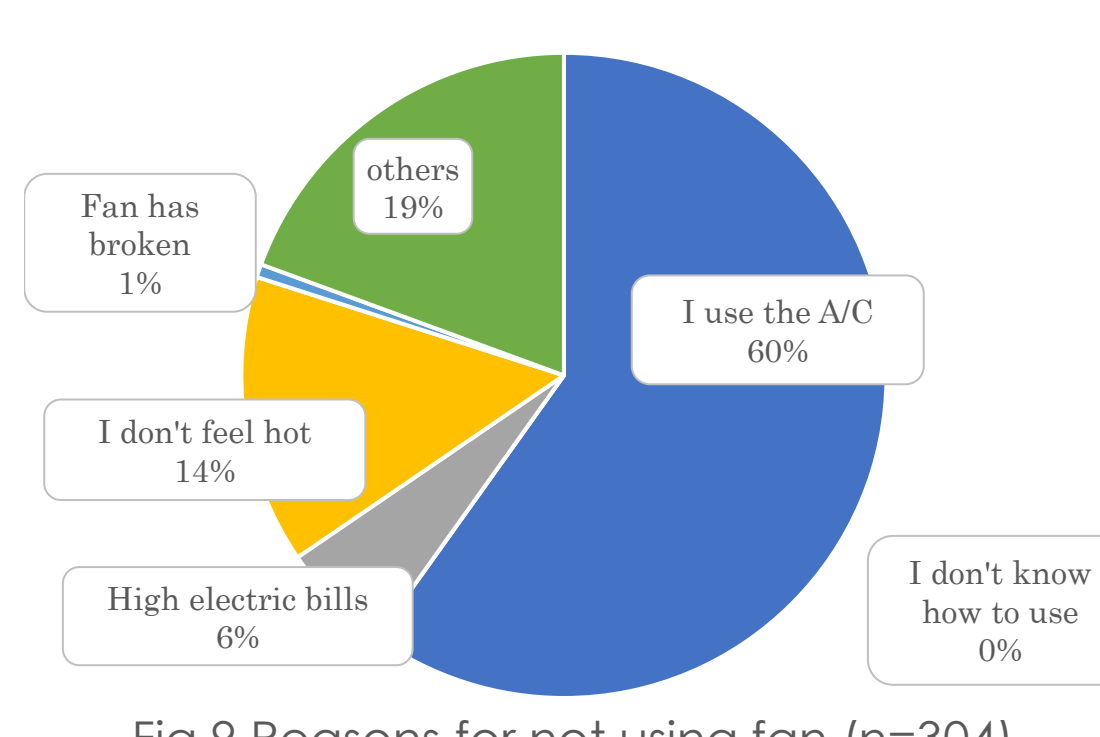
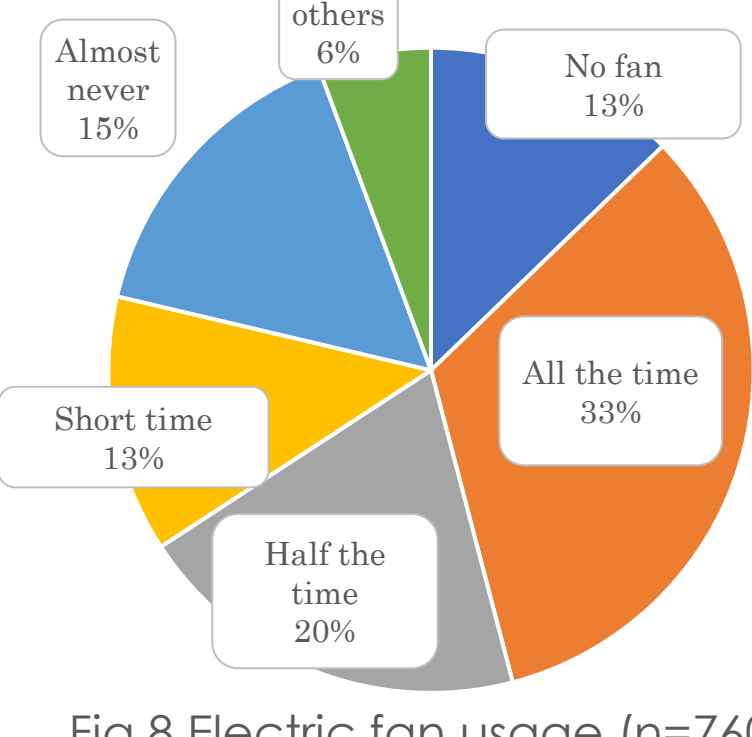
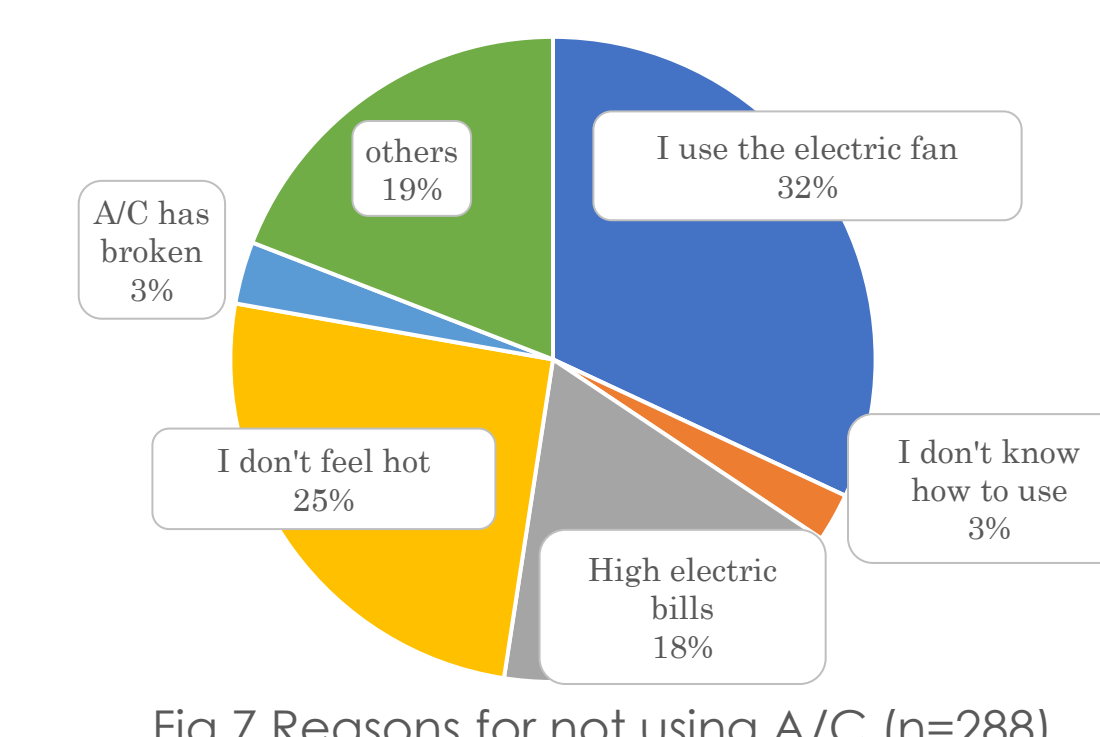
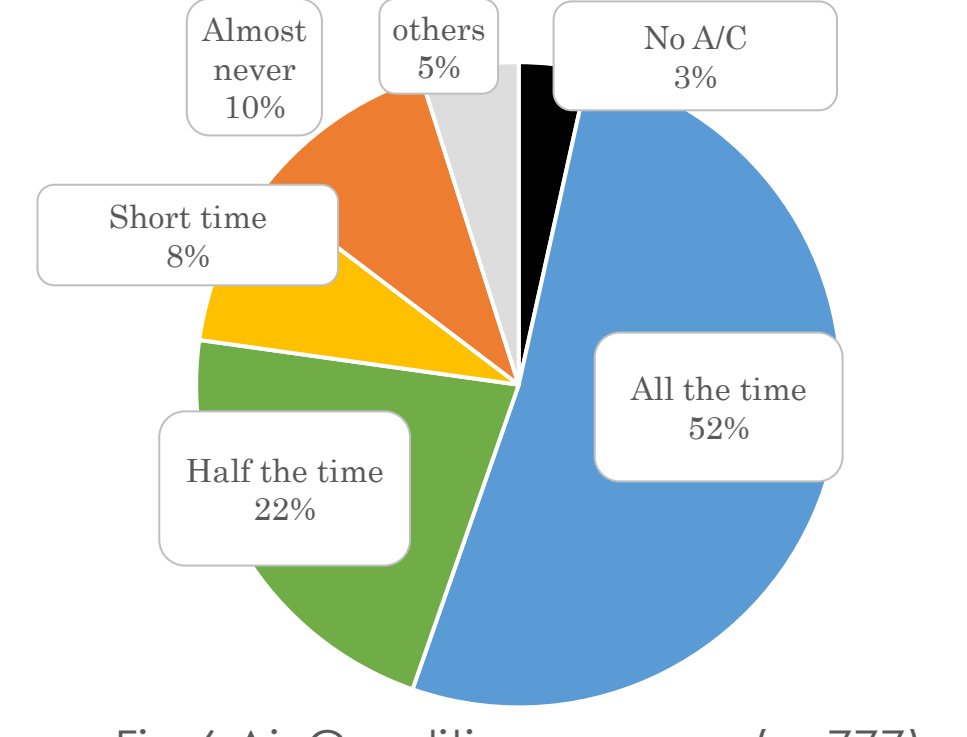
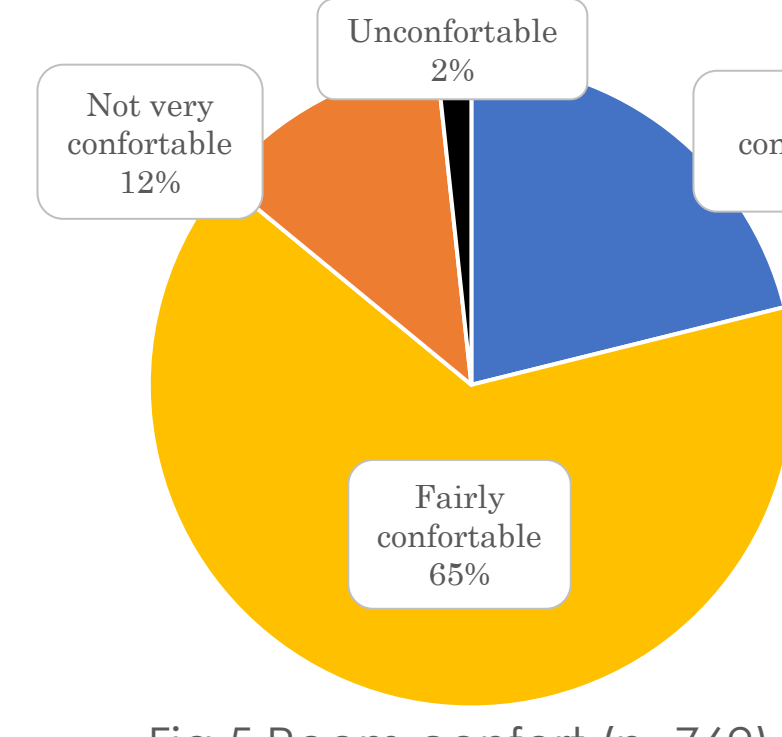
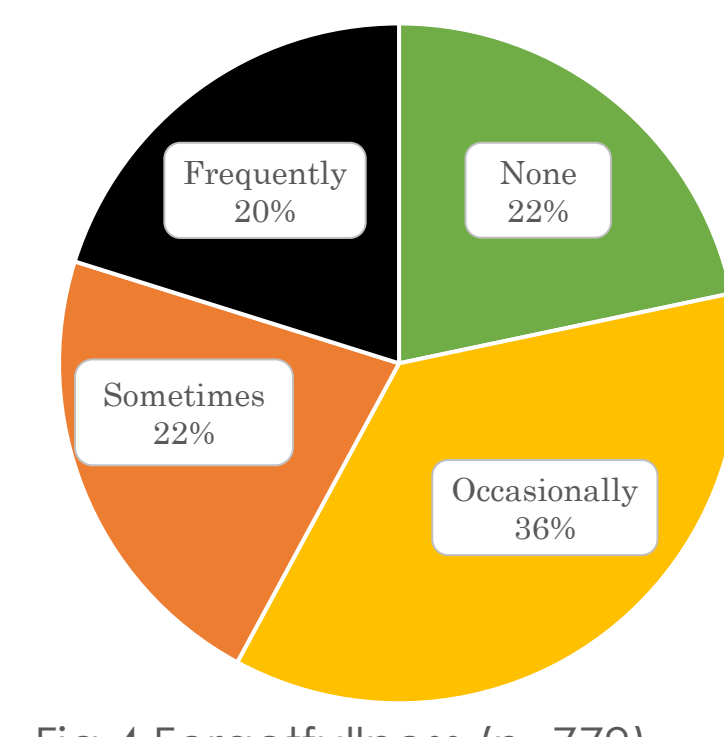
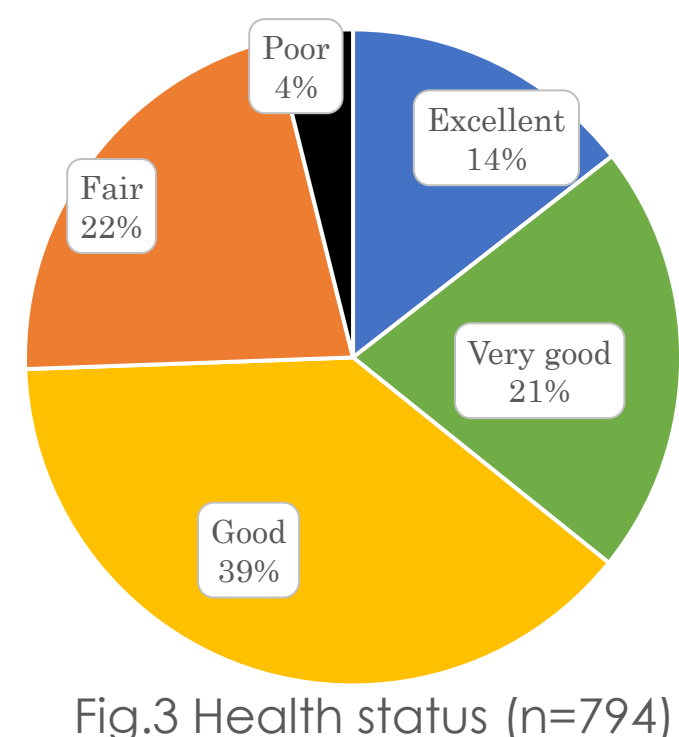
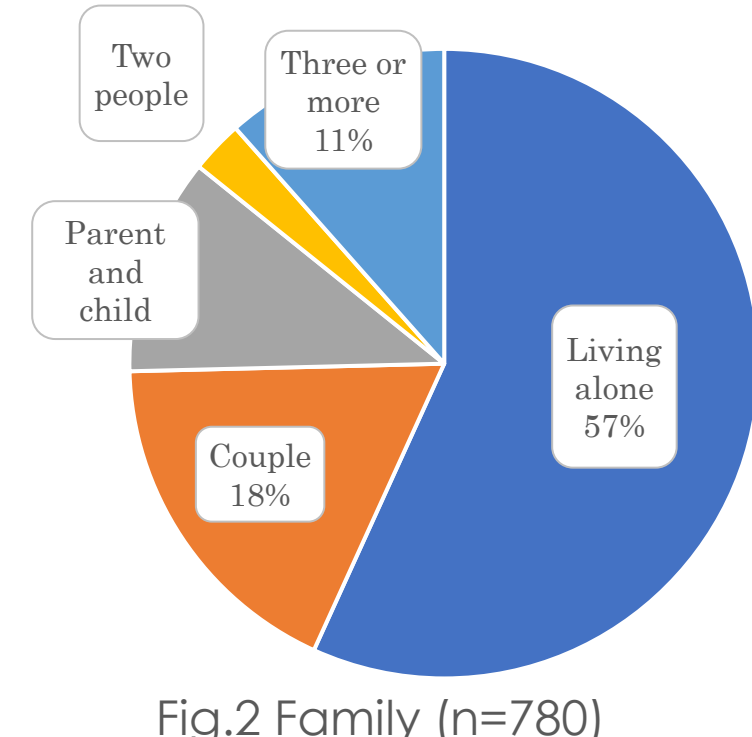
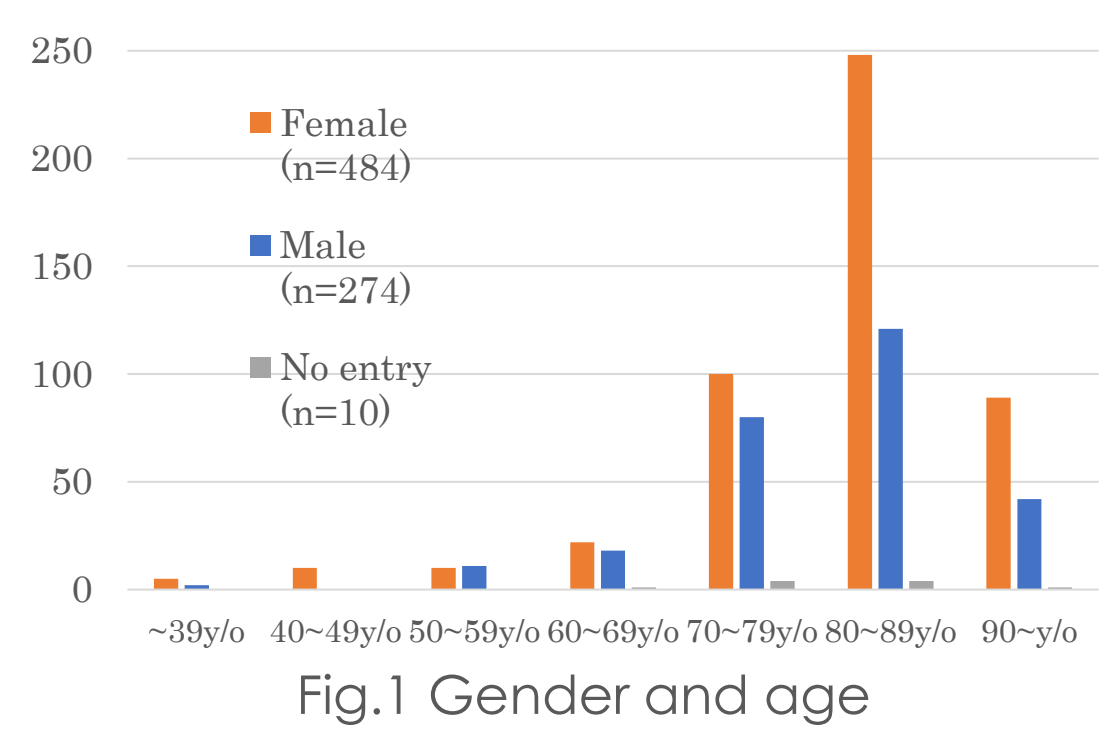
The questionnaire was anonymous and consisted in-room comfort, implementing measures that recommend by the government, forgetfulness, number of meals a day, financial difficulty, and so on.

Our staffs visited subjects, measured room temperature, handed over the questionnaire and envelope, and asked them to fill out and send it back. Informed consent was given and participants were told that they did not have to return the questionnaire if they did not agree to the survey.

Statistical tests were performed using SPSS ver. 26. The test methods were Student's t test, Kruskal Wallis test and one way ANOVA. The significance level was set at 5%.

【Results】

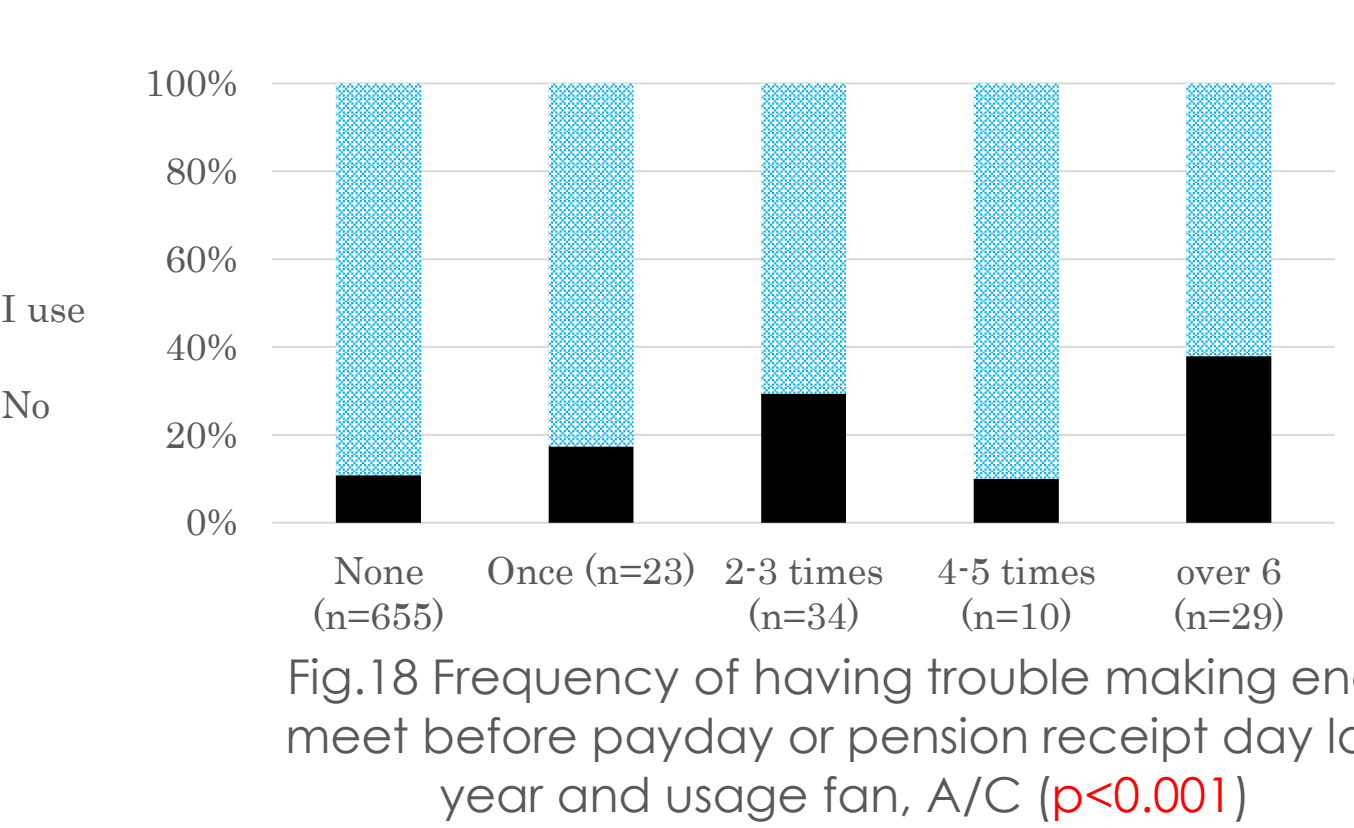
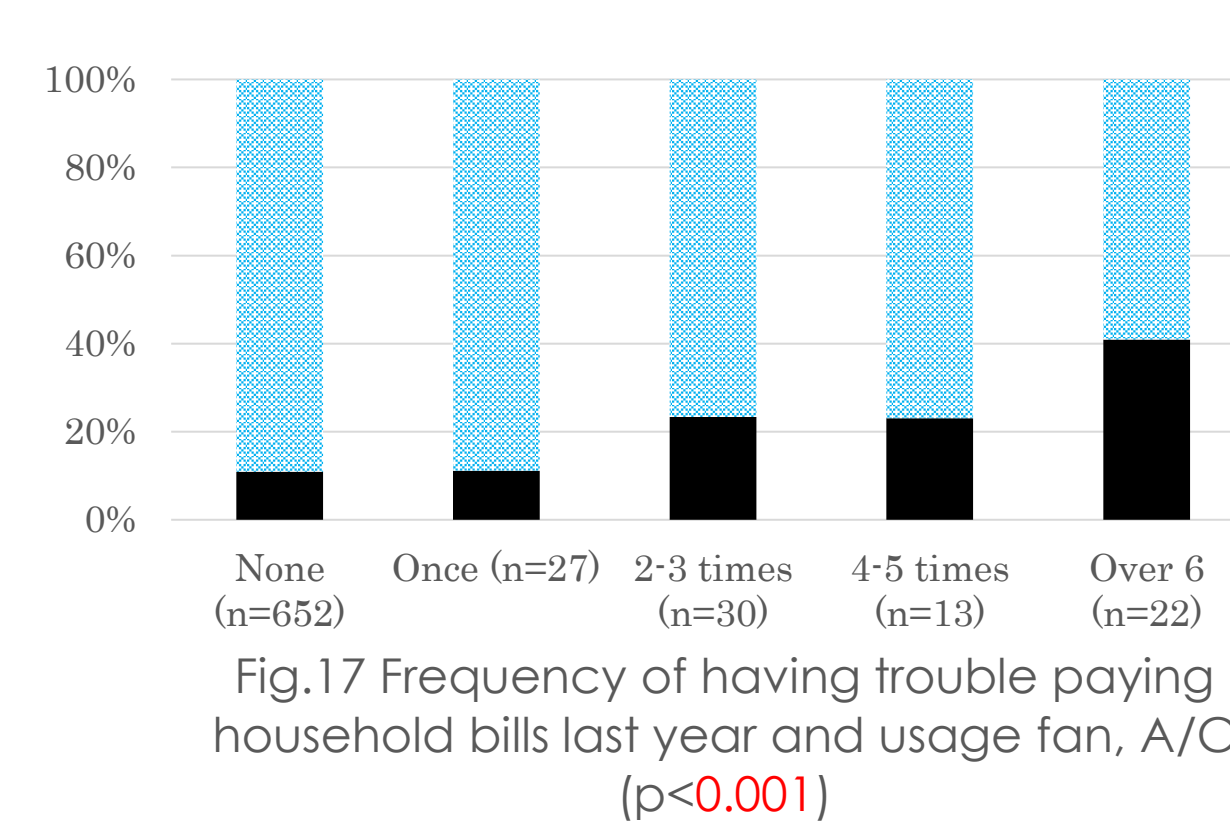
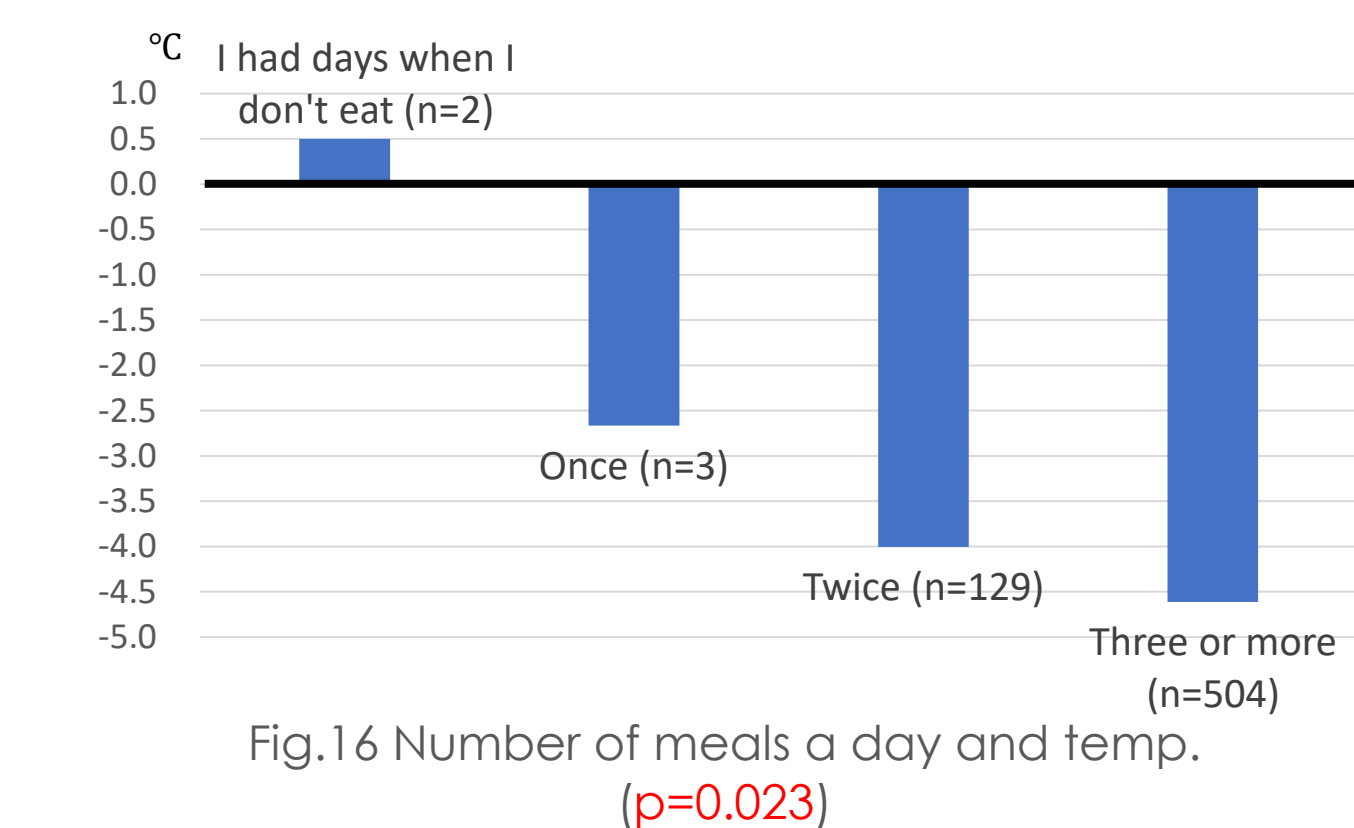
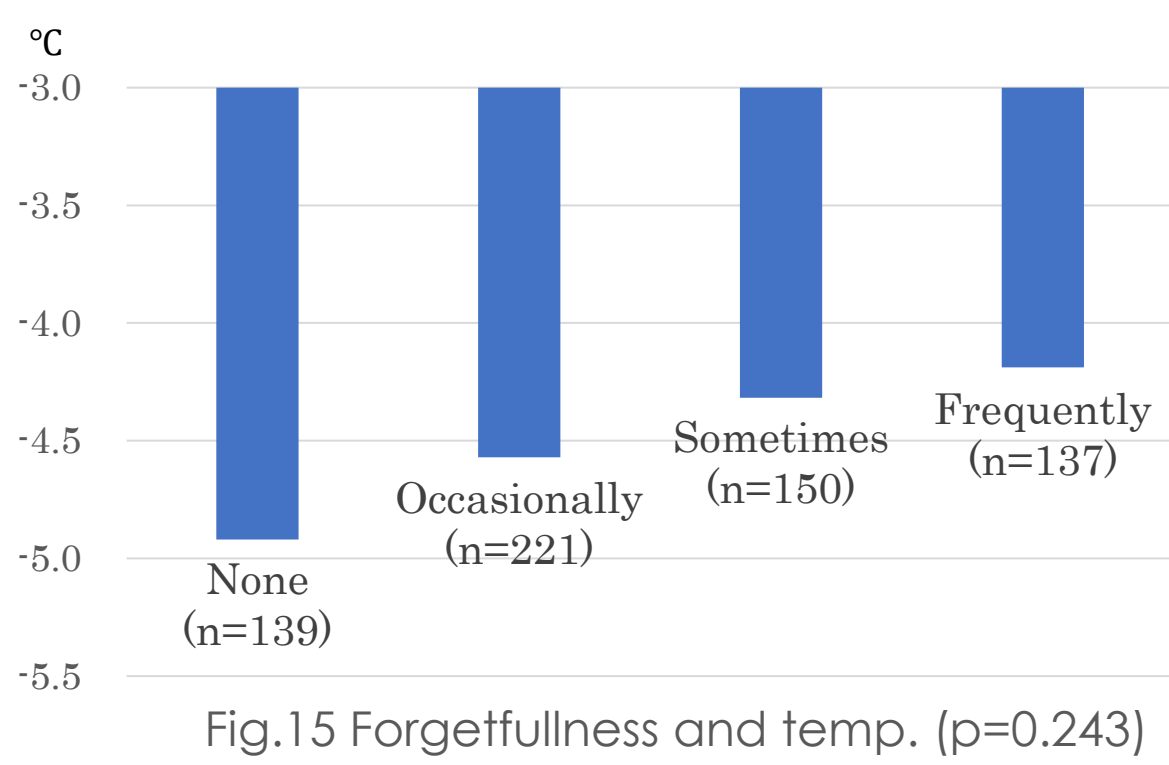
804 people responded. The number of questionnaires distributed was unknown, so the response rate was also unknown. "Temp." = in-room temperature minus outside temperature.



Naturally, temp. was lower for those who used A/C frequently.

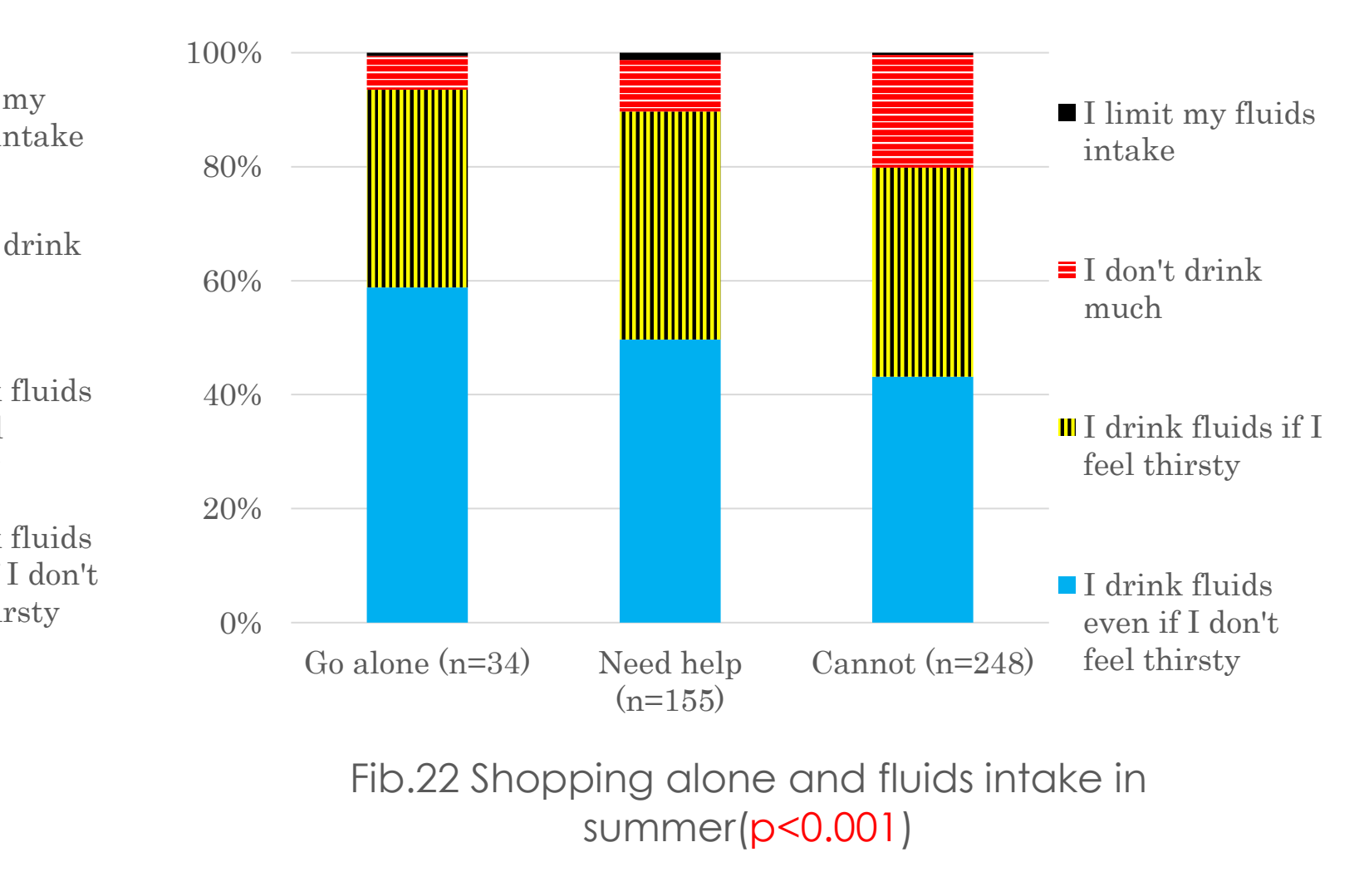
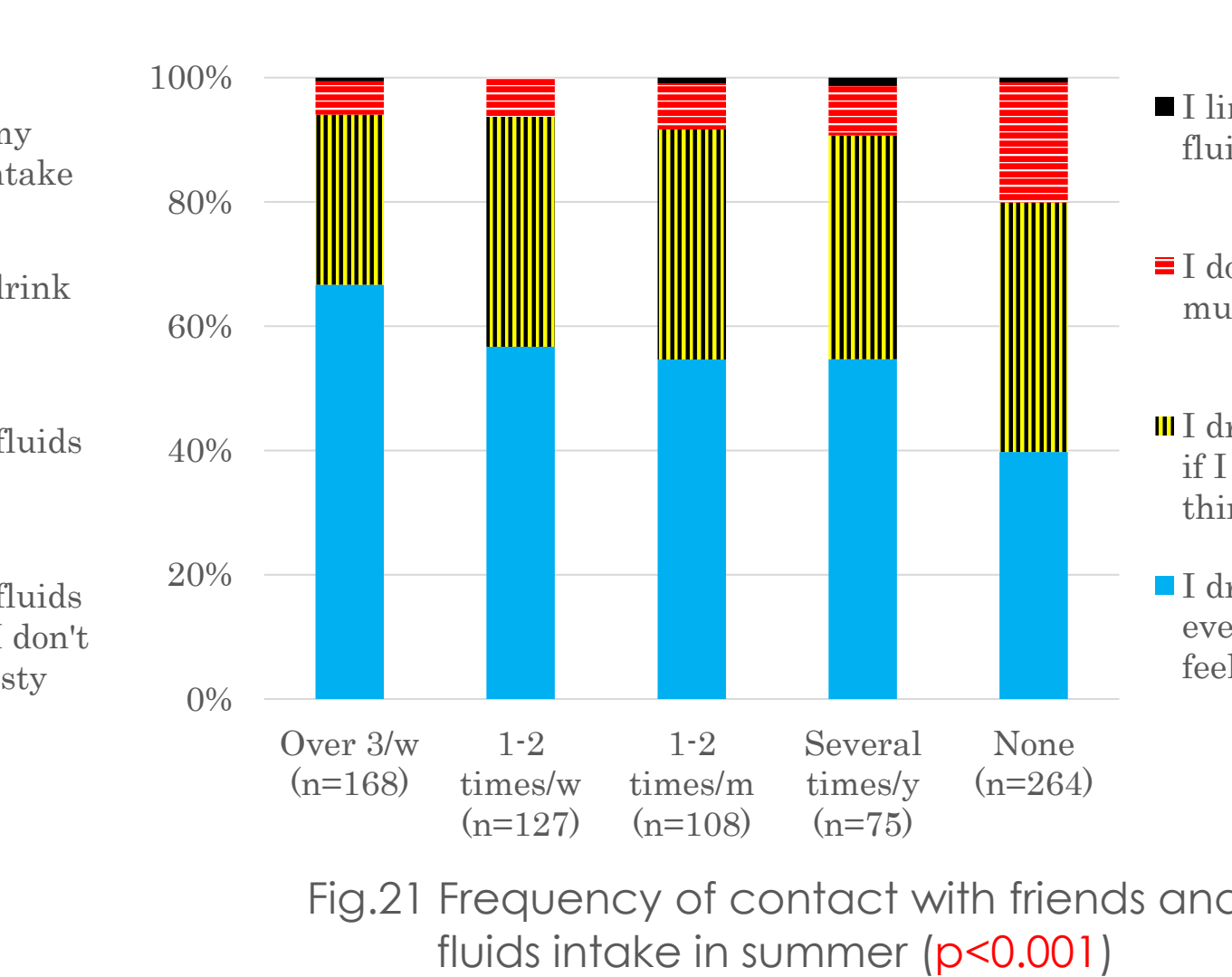
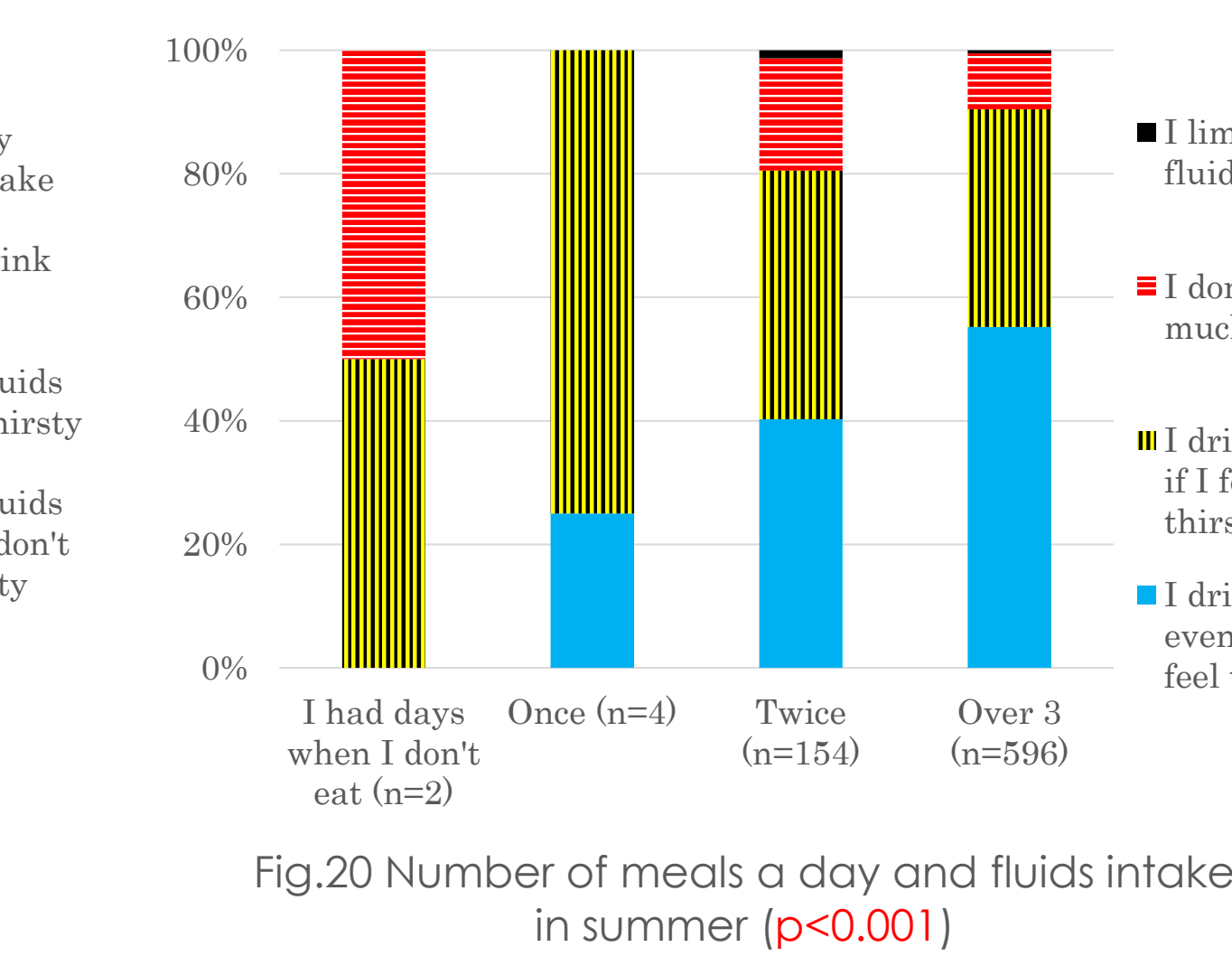
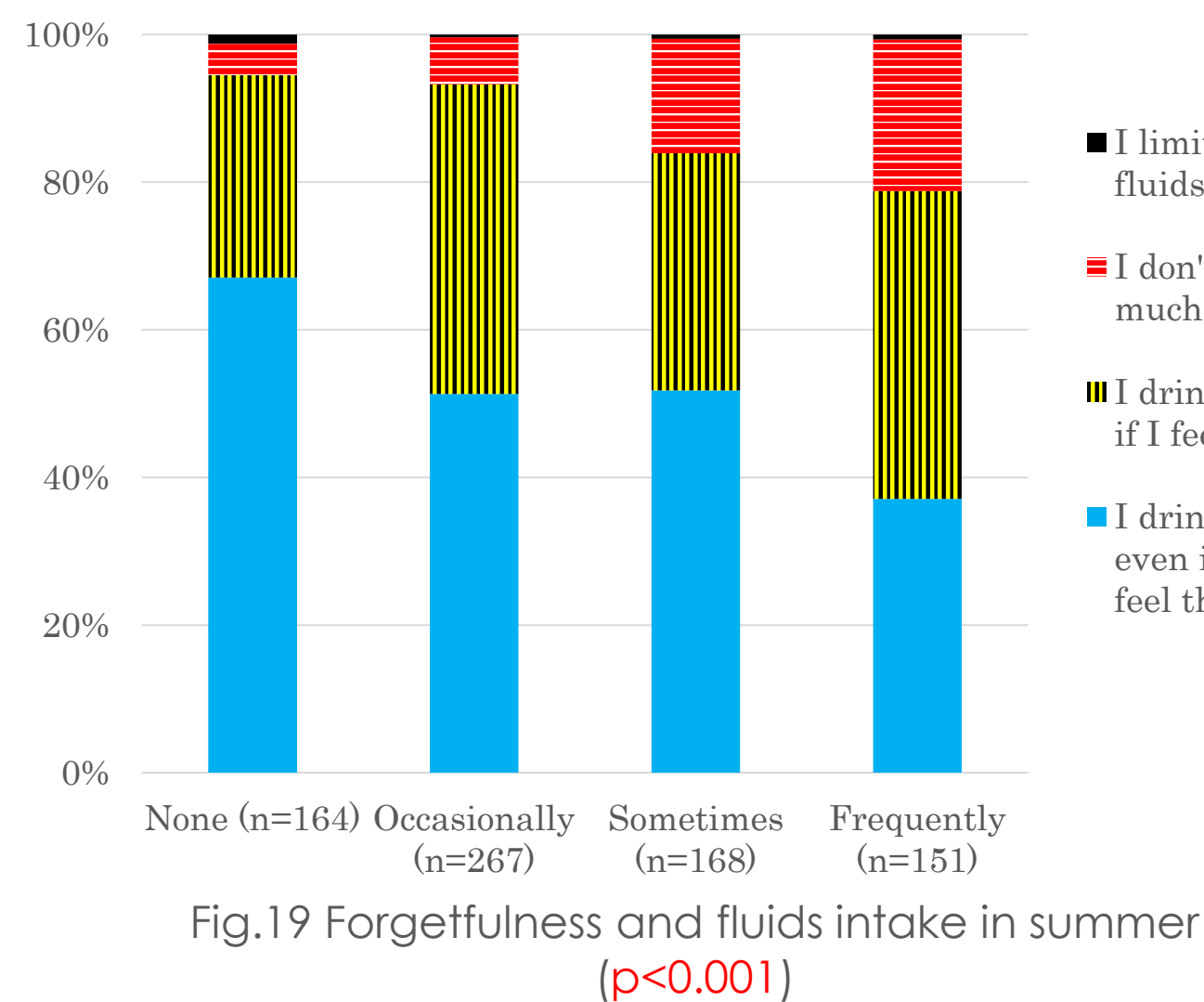
There was no relationship between the frequency of fan use and temp.

The Japanese government recommends improving ventilation in room as a measure to prevent heat stroke, but we thought that few people ventilate rooms when they have the A/C is on.



A significant difference was detected. In this survey, 3 people who answered that they only eat once and 2 people who answered that they skip meals on some days, both said that they sometimes have trouble paying household bills or making ends meet before payday. However, it is unclear whether this relationship would hold even if the number of respondents increased.

We believe that "having trouble paying household bills" and "having trouble making ends meet before payday or pension receipt day" represent financial difficulty, or poverty level. We considered that the relationship was not linear because we asked about the number of times they were in trouble, but asked too much details. We discuss changing the method of asking for a detailed number of times.



We believe that hydration is an important measure to prevent heat stroke. We, the medical profession, also encourage people to drink water even if they are not thirsty. However, not a few elderly people are reluctant to drink fluids due to issues such as urinating during sleep at night or leaking urine. In this survey, participants were asked about the number of times they urinated at night, but the results showed no correlation with fluid intake. We thought that the reason for this, as well as the financial difficulties, was that we asked too much detailed questions about the number of times.

We thought that forgetting to drink water was the reason why forgetfulness leads to reduced fluid intake. Generally, people often consume fluids when eating, so we thought there might be a correlation between the number of meals and fluid intake. We hypothesized that if they communicate with friends more often, more opportunities to be encouraged to drink water by their friends. Whether or not they can go shopping alone is thought to be related to physical functions such as walking and riding a bicycle. Therefore, people with reduced physical functions, such as walking, may refrain from drinking water.

【Conclusions】

In this survey, most of the subjects were patients at medical institutions affiliated with Osaka MIN-IREN. Compared to other medical institutions, these patients are thought to be more likely to be from lower social classes (for example, there are many households receiving public assistance benefits). Therefore, the overall figures are not representative of Osaka. However, we believe that by comparing respondents internally, we can clarify factors of heatstroke.

Due to space limitations, this presentation only report on room temperature, air conditioner and fan usage, and water intake as endpoints. These are considered to be factors that may lead to heat stroke. Therefore, if these factors can be intervened, it is believed that heat stroke can be reduced. But, financial difficulty, number of meals a day and forgetfulness were thought to be related to poor heat stroke prevention measures in terms of the environment and behavior. These were considered issues that could not be addressed by medical institutions alone. It was thought that a wide range of collaboration was needed, including not only medical institutions but also the government, private companies, and local residents.

This survey is conducted every year, and the results of this year's survey will be used to refine the questionnaire for next summer.