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Original Research

Support Nursing Researchers' Need from Academic Societies During COVID-19: A

Cross-sectional Survey

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This article has been accepted for publication and undergone full peer review but has not been through the copyediting, typesetting, pagination and proofreading process which may lead to differences between this version and the [Version of Record](#). Please cite this article as doi: [10.1111/nhs.12988](https://doi.org/10.1111/nhs.12988)

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Acknowledgments

The authors would like to thank all the JANS members who took time to fill out the survey questionnaire. The authors would also like to thank the JANS COVID-19 committee members. We are grateful for the opportunity to conduct this research on behalf of the society.

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All authors critically revised the manuscript and approved the final version of the manuscript.

Word count

5021 words

Registration of clinical trial and registration identification number

Not applicable.

Abstract

The activities of nursing researchers have been constrained by the COVID-19 pandemic. Therefore, this study aimed to investigate the types of support and related factors that nursing researchers hope to receive from academic societies during the pandemic, and to obtain suggestions for the role of academic societies in supporting nursing researchers and expanding research. An online survey was conducted with 1,532 Japan Academy of Nursing Science members. The survey included 19 items of potential support from the society during the COVID-19 pandemic as well as open-ended questions. Data were analyzed statistically and qualitatively. For 9 of the 19 items, over 50% of respondents reported that they “needed” or “very much needed” support. Multivariate analysis results showed that younger respondents and those with family members requiring care were significantly more likely to report needs for some items. In the open-ended comments, there were several suggestions for activities, including “Lobbying for revision of regulations on research implementation.” Nursing researchers expressed needs for support that reflect their demographic characteristics and situations, including collaboration across organizations and securing research-promotion and skill-development opportunities online.

Keywords: COVID-19, Japan, nursing education, nursing research, needs survey, pandemics

Key Points

1. Nursing researchers have been negatively affected by the COVID-19 pandemic and want academic societies to provide support such as online seminars on education and research, open sourcing of data, and online research-collaboration systems.
2. Younger nursing researchers had significantly higher needs compared with older members, as did those with family members requiring care.
3. It was suggested that academic societies should support nursing researchers based on their needs by collaborating with governments and various organizations to turn crises such as the COVID-19 pandemic into opportunities for realizing innovations in health care research.

Introduction

The COVID-19 pandemic has severely impacted the lives of people, societies, economies, education, and cultures around the world (Qiu et al., 2020; Zou, Huo, & Li, 2020). In many countries, where healthcare systems were overwhelmed by rapid increases in the number of hospitalized patients, frontline healthcare workers continued to provide services. Their working environments were often very challenging, and many endured long work hours, anxiety and fear of infection, deficiencies in communication with middle management, and enormous stress (Barello et al., 2020; Fiabane et al., 2021; Melnikov et al., 2022) Accordingly, the pandemic's impact on healthcare workers, including nurses, and their mental health has attracted attention and many researchers have published reports on this topic (Al Maqbali & Al Khadhuri, 2019; De Kock et al., 2021; Ness et al., 2021). For example, it was reported that 34.1% of nurses experienced emotional exhaustion during the pandemic (Galanis et al., 2021).

The COVID-19 pandemic has also had an effect on the work, mental health, and future career prospects of researchers (Miki et al., 2020; UK Research and Innovation [UKRI], 2021). In the UK, the lockdown had a negative impact on 61% of researchers, with more than half reporting that increased educational and management responsibilities decreased the amount of time they could devote to research (UKRI, 2021). In addition, early-career researchers and PhD students have been particularly hard struck in terms of publishing papers, securing funding, networking, and employment (Sohrabi et al., 2021). In Japan, the impact on work and research activities as well as incidents of power harassment under restrictions imposed during the pandemic were higher among researchers compared with non-researchers (Miki et al., 2020). In addition, female

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researchers reported a greater decrease in motivation compared with their male counterparts (Miki et al., 2020). Furthermore, more harassment was reported among researchers in the field of life science compared with other academic fields (Miki et al., 2020). These are serious challenges for female-dominated academic fields such as nursing science.

The following are reported to have an impact on nursing research and nursing education. Many educational institutions took preventive measures such as suspending in-person classes and campus shutdowns. Kalanlar (2022) conducted an online survey of thirty nursing educators working at nursing schools listed in the world's top 60. She reported that the structure of remote education varied widely by country and that issues requiring attention, from educators and students, were diverse. This study points out the necessity of considering the disadvantages of remote education during and in the post-pandemic period and the need to discuss novel plans that are more effective and efficient. Because nursing is a practical science that involves people, the impacts of the COVID-19 pandemic on researchers has been substantial in both the education and research arenas. Studies in different academic fields have also reported that the COVID-19 pandemic caused delays and disruptions to research activities (Miki et al., 2020; Sohrabi et al., 2021). Compared with other fields, nursing is arguably more susceptible to the new constraints on research due to concerns of infection spread to or from study participants (Im et al., 2021). Thus, in 2020, the Japan Academy of Nursing Science (JANS) conducted an online survey to understand the extent of disruptions and needed support in nursing research and related activities during the COVID-19 pandemic. With a membership of roughly 9,800, JANS is the largest Japanese academic research

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organization in nursing. Its members are involved in nursing education, research, and practice. To deal with matters related to nursing research as appropriate to society during this difficult situation, JANS established the COVID-19 Nursing Research Countermeasures Committee in 2020. In this study, we consider further action plans and examine effective implementation strategies. Some results from this project have already been reported; for example, the time that Japanese nursing researchers spent on research clearly decreased due to the overwhelming increase in time spent on education (Yoshinaga et al., 2021). Various barriers arose, including the likelihood of research restrictions due to concerns of participant safety and other burdens, which made conventional research activities difficult to perform (Amano et al., 2021). The COVID-19 pandemic has limited nursing researchers' access to research settings (Im et al., 2021). As illustrated above, the effects of COVID-19 on nursing researchers are obvious. Therefore, to prevent research stagnation, academic authorities must endorse the resumption of safe, effective clinical research by implement modified protocols and processes (Sohrabi et al., 2021). Because there is little likelihood of returning to a conventional research environment in the near future, it may be necessary to establish a "new normal" (Gibney, 2020; Sohrabi et al., 2021). Assembling large numbers of researchers under one roof and considering how to provide them with as much support as possible while taking advantage of networks is the mission of every academic society and is essential for the development of research. Also, because the vast majority of nursing researchers are women, they may be affected by traditional gender roles, which impose burdens such as housework, childcare, and caring for elderly relatives, burdens that may have increased during the pandemic (Im et al., 2021). Therefore, as an academic society, building a

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system to support nursing researchers both during and after the COVID-19 pandemic is an urgent issue for the progress of nursing research. However, what nursing researchers need or want to address these issues has not been reported. Therefore, in the present study, we aimed to do the following: determine the support that nursing researchers require from academic societies during the COVID-19 pandemic and factors related to that support as well as obtain suggestions for the role of academic societies in developing nursing research. Given that the current state of affairs may become the new normal, constructing a support system tailored to researchers' needs during the pandemic will likely contribute to the development of a new framework for invigorating research, a role which will be demanded of nursing academic societies in the future.

Methods

Research Design

This cross-sectional study involved an anonymous online survey and was conducted according to the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guidelines.

Participants and Data Collection

Participants were recruited from among the 9,524 members of JANS from July 1st to August 10th, 2020. JANS is the largest academic society for nursing researchers in Japan, and many of its members also belong to other nursing societies. Therefore, by targeting JANS members, we considered that the results of the survey would reflect the characteristics of Japanese nursing researchers overall. This study involved a closed survey that could be accessed only by JANS members on the survey section of the JANS website. Email invitations with a link to the survey form were sent to members who had

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registered their email addresses with JANS. Survey information was also posted on the JANS website for the few members who have not registered their email addresses.

Members who agreed to participate were included in the study. Respondents were able to change their answers at any time before submission. Once submitted, however, responses could not be changed. We received responses from 1,532 members (16.1%), of which 1,215 (12.8%) had no missing values on the central survey questions and were therefore used in the statistical analysis. In the sample size calculation with G*Power, when the effect size was medium, α prob was 0.05, and power was 0.95, the sample size with a chi-square test and with ANCOVA was 145 and 279, respectively.

Measures

Participants were asked to respond to the survey designed by the ad hoc JANS COVID-19 Nursing Research Countermeasures Committee based on their experiences over the previous 3 months (April–June 2020). Details of the measures and information used in this study are described below. For the full version of the questionnaire, see the Committee’s webpage (JANS, 2020).

The questionnaire in this study was originally developed by the members of the COVID-19 Nursing Research Countermeasures Committee. The questionnaire was based on a ResearchGate report entitled, “COVID-19 impact on global scientific community” (ResearchGate, 2020); an *Academist Journal* article entitled, “The effects of COVID-19 on academia” (*Academist Journal*, 2020); and a JANS survey on the state of research by young researchers (JANS Research/Academic Information Committee, 2013). Survey design requires extensive contemplation of the core questions (based on a hypothesis or primary research question), with consideration of all possible answers, and the inclusion

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of open-ended options to allow for other possibilities (Gaur et al., 2020). Therefore, a pilot study was conducted with the JANS board members to confirm the validity of the questionnaire. It took them approximately 25 min on average to complete the questionnaire. Based on the pilot study, the questions were reworded and finalized.

Support Needs of Nursing Researchers during the COVID-19 Pandemic

This part of the survey consisted of 19 items rated on a 5-step Likert scale (1. Very much needed, 2. Needed, 3. Somewhat needed, 4. Neither needed nor not needed, 5. Not needed) and open-ended questions about the research support needed or desired from nursing researchers as a result of the COVID-19 pandemic. The open-ended questions asked members to describe any methods or activities from academic societies that may be effective to support research during the COVID-19 pandemic.

Demographic Characteristics

Questions about demographic characteristics consisted of professional and personal characteristics. Professional characteristics included current position and academic degree. Personal characteristics included gender, age, involvement in childcare, involvement in caregiving for older adults or other family members.

Statistical Analysis

Descriptive statistics were calculated for the demographic characteristics of respondents and the 19 items of support needs from academic societies during the pandemic. The demographic characteristics “Others” and “N/A” were not included in the analysis because of the heterogeneity of responses and the difficulty in assigning them to a group. In a related study that found an association of age with declines in overall research time and the demographic characteristics of nursing researchers (Yoshinaga et

al., 2021), respondents were divided for analysis by age into those aged 46 years or older and those aged 45 years or younger. Therefore, in the present study, we similarly divided respondents into younger respondents and older respondents. For each of the 19 items, we combined two response categories (“Very much needed” and “Needed”) into a “needed” group, and the three remaining categories (“Somewhat needed,” “Neither needed nor not needed,” and “Not needed”) into a “not completely needed” group. We conducted chi-squared tests to examine the associations between demographic characteristics and each of the 19 items. Analysis of covariance (ANCOVA) was performed for select demographic characteristic, with all other demographic characteristics as covariates for the relationship between the demographic characteristics and the 19 survey items. Regarding the relationship between the demographic characteristics and the 19 items, we performed a binomial logistic regression analysis that regarded the “needed” category as the dependent variable. The data were analyzed using SPSS ver. 25 and evaluated as statistically significant at $p < .05$.

Qualitative Analysis

Among the responses of the 1,534 JANS members, those with open-ended data were assessed by qualitative inductive content analysis, using the following procedure (Elo & Kyngäs, 2008; Vaismoradi, Turunen, & Bondas, 2013). After gaining a sense of the overall picture by reading and re-reading the open-ended data, all responses were coded one by one, with care taken to ensure that the inherent meaning of the responses was not altered. The data were evenly divided and coded separately by the first and fourth authors. Then, all the authors validated the codes collectively and subcategories and categories were extracted based on similarities and differences. The analytical process

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was scrutinized by all the authors specializing in qualitative research. Thus, in order to increase the validity and reliability of the analysis, the process of coding and creating categories was carried out through a dialogue among the co-researchers until a consensus was reached (Elo & Kyngäs, 2008). The authors also created a coding tree (Supplementary file 4) to confirm the validity of the analysis and to demonstrate links between the data and results (Elo & Kyngäs, 2008). During the qualitative analysis, some new findings were extracted; however, the other findings were generally similar enough to the support needs of the 19 items. Therefore, the data were judged to be saturated.

Ethical Considerations

This study was conducted based on universal ethical principles (e.g., Declaration of Helsinki) for medical research in humans. This study was also approved by the ethics committee of the University of Miyazaki (Approval Number: O-0733; June 29, 2020). All respondents indicated acknowledgement of informed consent by ticking a checkbox before starting the online survey. This acknowledgement included the study objectives, methods, length of time required to complete the survey, and data storage information. In addition, completion of the questionnaire was taken as consent to participate in this research. Incentives were not offered for survey completion. Study logs containing JANS member IDs and personal information were kept and maintained separately by the JANS office. The survey results were reported in adherence with the Checklist for Reporting Results of Internet E-surveys (CHERRIES) (Eysenbach, 2004).

Results

Demographic Characteristics

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Responses were received from 1,532 members (16.1%). Responses with no missing data for the 19 items serving as the central survey questions were considered valid responses (n = 1,215; 12.8%). Table 1 shows the demographic characteristics of the respondents. Most were women (84.4%), and there were 729 respondents aged 46 years or older (60%) and 406 aged 45 or younger (33.4%). A total of 952 respondents (78.4%) reported having faculty appointments, whereas only 111 (9.1%) reported working as clinical nurses. Furthermore, 374 respondents (30.8%) were involved in childcare, and 174 (14.3%) were caregivers for older adults or other family members.

Support Needs of Nursing Researchers

As Figure 1 indicates, for all 19 items, the proportion of respondents who reported that they need support (responded “very much needed” or “needed”) was over 30%. In particular, the proportion of respondents reporting support needs exceeded 70% for the following 2 items: “Increasing online seminar and workshop opportunities” (80.9%) and “Training on effective teaching methods in the COVID-19 pandemic” (71.0%). In addition, the proportion reporting needs exceeded 50% for nine items, including “Making surveys conducted by JANS available as open-source data” (57.8%), “Recommendations to promote ICT [Information and Communications Technology] proficiency in educators for organizations whose members are affiliated with nursing societies (57.2%), “Training on study methods that can be implemented during crises, including the COVID-19 pandemic” (54.5%), “Building networks to promote continuity between research and teaching, practice, and policy in situations involving serious health problems, including the COVID-19 pandemic” (51.9%).

Associations Between Demographic Characteristics and the Number of Support

Needs

Chi-squared tests for confirming associations between demographic characteristics and each of the 19 survey items revealed that five or more support needs were significantly associated with each of the following: age, position, academic degree, and involvement in childcare (Supplementary file 1). These variables were considered to be affected by age. Therefore, we performed multivariate analysis with the number of survey items reported to be needed as the dependent variable. Table 2 shows results of ANCOVA examining associations between demographic characteristics and the number of survey items reported to be needed. Age categories and involvement in caregiving for older adults or other family members were significantly associated with the number of items needed. Compared with older respondents (aged ≥ 46 years), younger respondents (aged ≤ 45 years) reported a greater number of items needed, even when controlling for gender, position, academic degree, and involvement in childcare (95% CI -1.091 – 0.282 , $p = < .001$). Respondents involved in caregiving for older adults or other family members reported a greater number needs among the survey items compared with those who did not have such responsibilities, even when controlling for gender, age, position, academic degree, and involvement in childcare (95%CI -1.105 – 0.134 , $p = .012$).

Associations Between Demographic Characteristics and Each Item of Support

Needs

Logistic regression analysis was performed to examine associations between demographic characteristics and each item of support needed from academic societies. Table 3 shows the results for the factors of age categories and involvement in caregiving for older adults or other family members, which were the two demographic factors found

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to be associated with the numbers of items reported to be needed. Compared with older respondents, younger respondents appeared to have a significantly higher likelihood of reporting needs for support from academic societies in 10 items ($p < .05$), including “Cooperation for surveys by JANS members” (OR 1.507, 95% CI 1.083–2.096); “Making surveys conducted by JANS available as open-source data” (OR 1.526, 95% CI 1.099–2.120), “Increasing online opportunities for exchange and consultation between JANS members” (OR 1.589, 95% CI 1.140–2.214), and “Training on study methods that can be implemented during crises, including the COVID-19 pandemic” (OR 1.671, 95% CI 1.203–2.319). Compared with those who were not responsible for caregiving for older adults or other family members, those who were appeared to have a significantly higher likelihood of reporting support needs from JANS in 5 items ($p < .05$), including “Increasing online opportunities for exchange and consultation between JANS members” (OR 1.509, 95% CI 1.050–2.170) and “Sharing cases of remotely and effectively conducted joint research” (OR 1.809, 95% CI 1.255–2.609). Associations between other demographic characteristics and each item of support needed from JANS are shown in Supplementary files 3-1 and 3-2.

Analysis Results of Open-ended Comments

As shown in Table 4, qualitative and inductive analysis of open-ended comments yielded 46 codes, from which we derived 11 subcategories and 5 main categories. The 5 main categories of ideas for support from academic societies were as follows:

“Recommendations for work systems and employment patterns,” “Lobbying for revision of regulations on research implementation,” “Support for balancing social roles and family,” “Support for the promotion of research and educational activities,” and “Support

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for collaboration and information sharing with other organizations.” Although these support ideas mostly overlapped with the contents of the 19 survey items, some new ideas were identified. For example, one respondent mentioned a need to approve emergency transfers of data from one’s institution, and another sought support for education about the protection of personal information and ethical considerations in interview surveys conducted using ICT. These were mentioned mostly by younger respondents. Other suggestions, which were mentioned by many older respondents, included support to lobby for revision of regulations on research administration, including open recruitment of joint studies with a wide range of topics, helping graduate students, and extending deadlines for the use of research grants.

Discussion

This study is the first to clarify the support needs that nursing researchers would like JANS to provide during the COVID-19 pandemic. Although Yoshinaga et al. (2021) did not observe significant differences between younger and older respondents in reductions of time spent on research, this study found that younger members have a significantly greater need for support from academic societies compared with older members. For example, this study revealed a high demand among younger members for support, including open sourcing of data from JANS surveys, increasing online opportunities for exchange between JANS members, and training on study methods and promoting research activities that can be implemented online during the pandemic. According to a survey of younger JANS members (Fukahori et al., 2015), barriers to conducting research, including lack of research competency, lack of research resources, non-establishment of an identity as a researcher, and difficulty balancing the workload of

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education and management, were reported before the COVID-19 pandemic. It therefore is possible that the COVID-19 pandemic has exacerbated barriers that younger members have long dealt with as well as added further difficulties. That survey also reported that the needs of young members include provision of knowledge and technology related to research, support for networking, and improvement of environments and systems for research activities, which can be understood as highly relevant needs of younger members who are committed to pursuing careers as nursing researchers and thereby contributing to society. In addition, 60% predicted a negative impact or a very negative impact on their career prospects (UKRI, 2021). It is thought that this tendency is stronger among younger members and that anxiety about one's career increases the need for support from academic societies.

However, regardless of age differences, over 50% of the respondents reported that they need support in 9 out of 19 support items. In particular, for the items "Increasing online seminar and workshop opportunities," and "Training on effective teaching methods in the COVID-19 pandemic," over 70% of the respondents reported that support was needed. These findings suggest that given the broad impact of the COVID-19 pandemic, nursing researchers have a strong demand for support from their professional societies in the areas of education and research activities. The qualitative analysis portion of this study also found high demand for "Recommendations for work systems and employment patterns," "Support for the promotion of research and educational activities," and "Support for collaboration and information sharing with other organizations." These findings hint at psychological isolation of nursing researchers caused by social distancing and other restrictions imposed during the COVID-19

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pandemic. A study of nursing school students reported that over 90% of their study participants experienced higher than moderate levels of isolation (Labrague et al., 2021). Although we cannot find equivalent studies of isolation in nursing researchers, we can easily imagine similar situations if these researchers are affiliated with universities. In the UK, over three quarters reported feeling depressed during the lockdown (UKRI, 2021). Previous studies have reported that scholarly writing has increased for some faculty members whose fieldwork activities have been stalled by the pandemic, while others have seen a decline because of additional personal responsibilities (Abshire et al., 2021), and that faculty members are struggling with their teaching due to difficulties in resource and time management (Nabolsi et al., 2021). Although writing time has increased during the pandemic, prolonged psychological pain such as isolation and depression is feared to negatively impact writing ability and stifle creativity in attempting new research. This may be why nursing researchers expressed a desire to connect with each other online and to have new opportunities for research activities. The results of this study reflect a feeling among nursing researchers that despite the massive physical barriers presented by the COVID-19 pandemic, researchers want to preserve psychosocial connections through means such as online contact. Academic societies can contribute greatly to the advancement of nursing research by securing opportunities for multilayered connections among researchers and consequently relieving their isolation and depression, which in turn can improve nursing researchers' spirituality not only during the COVID-19 pandemic but after the pandemic as well. The findings of this provide important insights about potential solutions and new activities to address the challenges that have arisen due to pandemic-related restrictions. Furthermore, provision of support from an academic

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society could reach beyond any one institution's solutions and facilitate improvements in nursing researchers' skills, even during a state of emergency, as found by Li et al. (2021) about the broad effects of online teacher training programs. Nursing academic societies must utilize ICT to pursue new possibilities in research and education. In addition, to conduct activities that better approximate a face-to-face setting in nursing—a field that demands on-site and real-time research and education—nursing academic societies need to collaborate with engineers to upgrade information technologies.

Another interesting finding of this study is that respondents involved in caregiving for older adults or other family members appeared to have significantly higher numbers of needed supports compared with those without such responsibilities. As a distinct phenomenon, working at home created a great need for opportunities to pursue research activities online. This may be similar to the findings of Myers et al. (2020), who reported large reductions of time spent on research by female scientists and those with young children since the COVID-19 pandemic started. Most nursing researchers are women. The present study found significant differences in responses according to the presence of care recipient family members, which may reflect Japanese population demographics and cultural backgrounds in addition to changing international population dynamics reported by previous studies. In other words, the fact that Japan is the world's forefront super-aged society (Iijima et al., 2021; World Health Organization, 2015) and that traditional gender ideology imposes care-giving roles differentially to female family members (Hashizume, 2000; Paillard-Borg & Strömberg, 2014) may help explain these findings. This aligns with the findings of the present study from the qualitative analysis of comments that more support is needed to help balance social roles and family life. Therefore, considering that

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nursing researchers with family care responsibilities have a greater need for support than those without such obligations, nursing academic societies need to build support systems that help its members, who are predominantly women, pursue research activities regardless of their life course situation. At the same time, caregiving must be perceived as a social issue to realize the concept of a community inclusive society (Ministry of Health, Labour and Welfare, 2016), and nursing academic societies must contribute to society overall to improve social support systems.

In addition, our qualitative analysis revealed some original ideas for support to change, for example, research restrictions related to information and data management. These needs may reflect problems and conflicts faced by researchers who were forced to conduct research online while working at home. The US Food and Drug Administration (FDA) has provided guidelines for clinical research during COVID-19; these guidelines suggest the use of electronic data capture via telemedicine, phone interview, or alternative locations for assessment (Sohrabi et al., 2021; U.S. Department of Health and Human Services, 2020). In addition, many sponsors and funding bodies have indicated extensions to protect researchers' careers (Sohrabi et al., 2021). Moving forward, it is important that nursing academic societies work together to provide suitable research environments in addition to building their own support systems and guidelines for conducting research during the pandemic, in order to help researchers avoid isolation. Furthermore, collaboration with an organization such as the Science Council of Japan that represents the Japanese science community across all fields of sciences may be required.

This study had several limitations. First, although we set reminders, the response rate was low, so it is possible that only JANS members who were highly interested in

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JANS activities responded. Response rates are said to be low for online surveys (Eysenbach, 2004). The present survey was a broad survey of the effects of the COVID-19 pandemic on nursing researchers from the perspectives of the current situation, restrictions, and needs as a JANS project study. Therefore, although the original survey comprised 152 questions, increasing the response rate requires refining the questions. In addition, among the independent variables, the relationship with the dependent variables that were unanswered or for which “other” was selected was difficult to interpret and thus further study is needed. Furthermore, the present survey did not include questions on the use of social media or telemedicine. Social media, which is effective for academic exchange and surveys as well as post-publication dissemination and promotion of academic papers during a pandemic, is expected to play an active role in these areas in the future (Gupta, Gasparyan, Misra, et al., 2020; Gupta, Gasparyan, Zimba, et al., 2020). In nursing, international academic papers have been published using tweets as data (De Gagne et al, 2021). Therefore, future surveys must include questions on the use of social media and telemedicine. Furthermore, because the COVID-19 pandemic is ongoing, it will be necessary to investigate the long-term effects through future longitudinal studies.

Conclusion

This study about support needs for nursing researchers during the COVID-19 pandemic found that over 50% of the study respondents needed support from the association in 9 areas, including open-sourcing data from JANS surveys, promoting online research activities, recommending needed research during the COVID-19 pandemic, and training on effective teaching methods. The quantitative analysis results correspond to those of the qualitative analysis. In addition, the multivariate analysis

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results revealed that younger members and those involved in caregiving for older adults or other family members have significantly larger numbers of needed supports compared with their older counterparts and those without caregiving obligations. These findings suggest that nursing researchers hope for or even expect academic societies to provide support that reflects members' needs, including collaboration systems beyond individual organizations using ICT, opportunities to promote one's research and develop skills online, and supporting additional activities of the Young Scientists Committee.

Relevance for Clinical Practice

This study about the support needed by nursing researchers focuses on research-related support, and our results highlight high demand, especially among younger members. This might be related to the fact that older members are often preoccupied with teaching or management activities. Many researchers have reported having less time to conduct research and communicate with other researchers as a result of the increased time they must devote to preparing content for online classes. (Miki et al., 2020). Going forward, it will be necessary for universities and academic societies to work together to determine the best way to conduct research under circumstances such as the COVID-19 pandemic.

Presently, academic societies actively promote online seminars and supports the activities of the Young Scientists Committee, both of which reflect the findings of this study about providing more opportunities for participation online and the significant needs of younger members. To accommodate the ambitions of young researchers, new research opportunities, including interdisciplinary research and international joint research, will need to be provided. It is important that nursing academic associations take

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advantage of changes in technology, such as the merging of cyberspace and physical space (Deguchi et al., 2020), to turn crises such as the COVID-19 pandemic into opportunities for realizing innovations in health care research. Given the possibility that the current situation will become the new normal, the development of potential applications for innovative, dynamic technologies in nursing research by academic societies will expand research fields all over the world and lead to the creation of nursing research opportunities closer to people's daily lives. To realize such researcher support systems, it is important that academic societies collaborate with the government and various organizations to secure funds. Furthermore, in countries where large-scale academic societies are not well developed, it is important to support the maturation of academic societies so that they can build a strong financial base. This requires cross-border support and collaboration.

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Supplemental File X. Checklist for Reporting Results of Internet E-Surveys (CHERRIES)

Item Category	Checklist Item	Page no.	Description
Design	Study design	6	This study is cross-sectional study.
IRB (Institutional Review Board) approval and informed consent process	IRB approval	10	This study was approved by the Research Ethics Committee of the University of Miyazaki (Approved Number: O-0733 [Approval Date: June 29, 2020]).
	Informed consent	10	All participants indicated acknowledgement of informed consent by ticking a checkbox before starting the online survey. It included the study objectives, methods, length of time to complete the survey, and data storage information. In addition, completion of the questionnaire was taken as consent to participate in this research.
	Data protection	10	Study log which contained the JANS member ID and personal information is separately kept and maintained by JANS office. The questionnaire results were anonymous when providing to the researchers. The fully de-identified dataset is kept on password protected computers.
Development and pre-testing Recruitment process and description of the sample having access to the questionnaire	Development and testing	10 - 11	The questionnaire in this study was originally developed by the members of the COVID-19 Nursing Research Countermeasures Committee in the JANS. A pilot study was conducted to the JANS board members to confirm the validity and efficiency of the questionnaire. It took approximately 25 minutes on average for them to complete the questionnaire. Based on the pilot study, the questions were reworded and finalized.
	Open survey versus closed survey	7	This study was a closed survey, and could only be accessed from the survey section of website by JANS members.
	Contact mode	7	Email invitation with a link to the survey was sent to JANS members who had registered their email addresses with the JANS. A survey announcement was also posted on the JANS's website.
	Advertising the survey	7	The survey was not advertised. Only JANS members were invited to participate.
Survey administration	Web/E-mail	7	The survey was sent out through e-mail with a link, and the data was entered manually into a database by JANS administrative staff. A survey announcement was also posted on the JANS's website.

Item Category	Checklist Item	Page no.	Description
	Context	5	JANS described this project on their website, which also describe its history, missions and values. In addition, the establishment of the COVID-19 Nursing Research Countermeasures Committee is explained in the introduction.
	Mandatory/voluntary	7	The survey was completely voluntary. It is described in Participants and Data Collection.
	Incentives	10	There were no monetary incentives for participation. However, the findings of this survey will be applied to new supportive measures that will be investigated and presented at the Annual Conference of the Japan Academy of Nursing Science and in the JANS website as promptly as possible for participants' benefits.
	Time/Date	6 - 7	All members of JANS were recruited online between July 1st, 2020 and August 10th, 2020 after JANS explained the purpose of this study on their webpage.
	Randomization of items or questionnaires	6 - 7	Questionnaires were not randomized or alternated. We asked all JANS members to investigate.
	Adaptive questioning	8	Adaptive questioning was used, and relevant questionnaire items were displayed as an open-ended question.
	Number of Items	19	A total of 152 questions were included in the original survey
	Number of screens (pages)		The full survey was distributed over one page
	Completeness check		There was no completeness check at the end of the survey. Most items required for adaptive questioning included a "Don't know/no sure" option.
	Review step	7	Respondents were able to change answers at any time before the submission. Once submitted, however, respondents were unable to change their responses
response rates	Unique site visitor	7	Determination of unique visitors was handled by the provider, JANS. This was a closed survey, and was located within the members-only section of the JANS website and could only be accessed by JANS members.
	View rate		Not applicable.

Item Category	Checklist Item	Page no.	Description
Preventing multiple entries from the same individual	Participation rate	10	A total of 9,524 JANS members were invited to the survey; of these, 1,532 participants responded to the survey, with a response rate of 16.1%.
	Completion rate (Ratio of users who finished the survey/users who agreed to participate)		
	Cookies used		Cookies were not used
	IP check		IP addresses were not checked
Analysis	Log file analysis		Not used
	Registration	6 - 7	Registration was not required; however, all participants used the members-only section of the JANS website to access the survey website.
	Handling of incomplete questionnaires	10 - 11	Data with missing values in the dependent variable (support needs of 19 items) were excluded, and questionnaires that answered all 19 items were analyzed.
References	Questionnaires submitted with an atypical timestamp	8	No respondents were removed from the survey for completing the items too soon. There was no cutoff point for submitting the survey. The estimated completion time for the questionnaire was approximately 25 minutes
	Statistical correction		Weighting of items or propensity scores were not used.

1. Research grant related to the COVID-19 pandemic
2. Financial assistance for people who cannot start or continue studies abroad because of the COVID-19 pandemic
3. Cooperation for surveys by JANS members (requests and distribution of survey forms)
4. Making surveys conducted by JANS available as open-source data
5. Increasing online seminar and workshop opportunities
6. Increasing online opportunities for exchange and consultation between JANS members (forums, mailing lists, and private groups on social media)
7. Forming online journal clubs
8. Forming online research meetings
9. Building online systems for individual consultation related to research
10. Sharing cases of remotely and effectively conducted joint research
11. Sharing cases of successfully conducted research while working from home during the COVID-19 pandemic
12. Sharing cases of study management that effectively handled the impacts of the COVID-19 pandemic
13. Training on study methods that can be implemented during crises, including the COVID-19 pandemic
14. Training on effective teaching methods during the COVID-19 pandemic
15. Building networks to promote continuity between research and teaching, practice, and policy in situations of serious health problems, including the COVID-19 pandemic
16. Recommendations on research during the COVID-19 pandemic for organizations that members are affiliated with
17. Recommendations on education during the COVID-19 pandemic for organizations that members are affiliated with
18. Recommendations on working styles during the COVID-19 pandemic for organizations that members are affiliated with
19. Recommendations to promote ICT proficiency in educators for organizations that members are affiliated with (e.g., employment of ICT support staff)

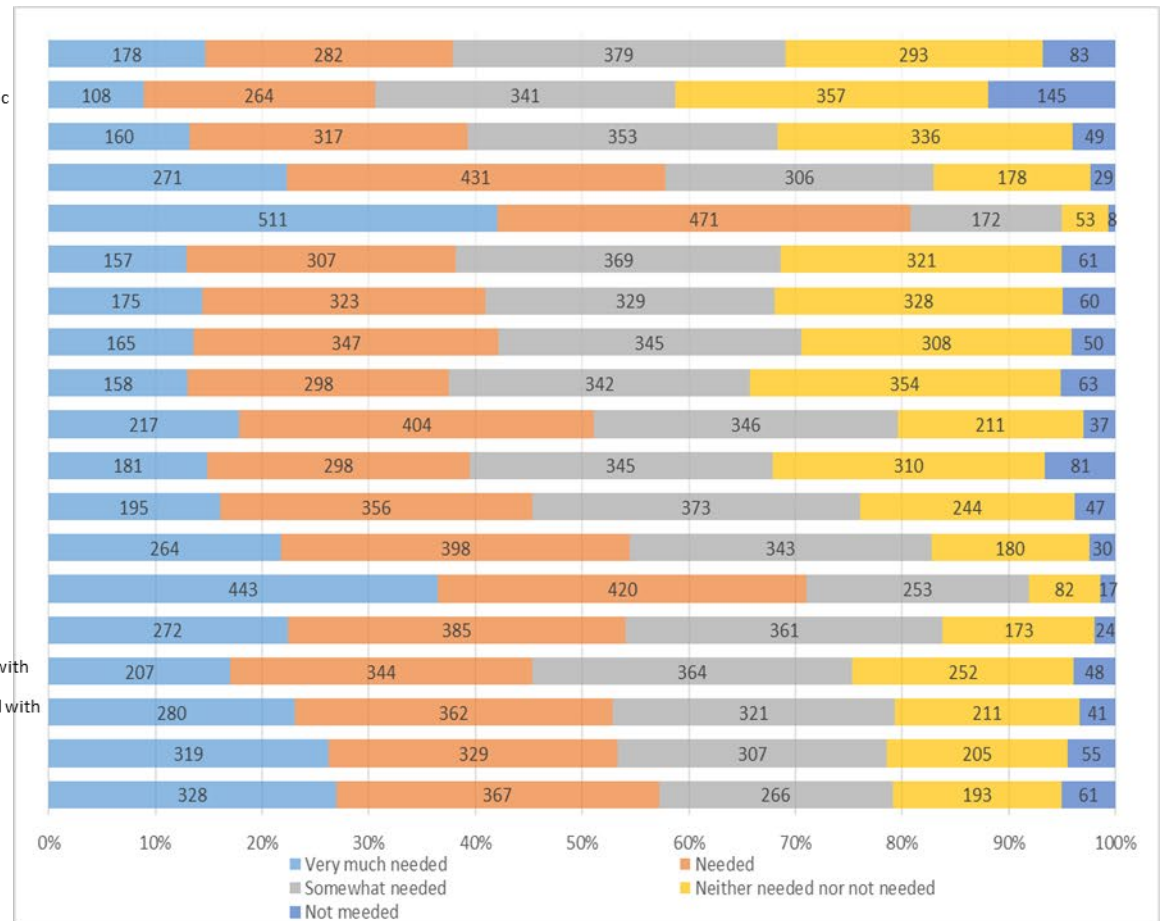


Figure 1, *Support Needs of JANS Members* (N=1215)

Table 1. *Demographic Characteristics (n = 1215)*

	n	%
Gender		
Male	111	9.1
Female	1025	84.4
N/A	79	6.5
Age		
less than 35 years old	96	7.9
36 to 45 years old	310	25.5
46 to 55 years old	402	33.1
56 to 65 years old	287	23.6
65 years old or older	40	3.3
N/A	80	6.6
Position		
Professor	311	25.6
Associate professor/lecturer	429	35.3
Assistant professor/teaching associate	212	17.4
Clinical Nurse	111	9.1
Others	51	4.2
N/A	101	8.3
Academic degree		
Doctoral	572	47.1
Masters or less	590	48.6
N/A	53	4.4
Involvement in childcare		
Yes	374	30.8
No	734	60.4
N/A	107	8.8
Involvement in caregiving for older adults or other family members		
Yes	174	14.3
No	932	76.7
N/A	33	2.7

Table 2
Association Between Demographic Characteristics and Number of the 19 Support Items Chosen (n = 997)

		Mean	SD	95%CI		<i>p</i> value
Gender	Male	9.88	5.816	-0.789	0.049	0.533
	Female	9.45	5.5			
Age	Less than 45 years old	10.36	5.302	-1.091	-0.282	<.001*
	46 years old or older	9.04	5.598			
Position	Professor	8.98	5.666	-0.278	0.305	0.928
	Associate professor/lecturer	9.52	5.416			
	Assistant professor/teaching associate	10.36	5.366			
	Clinical Nurse	9.31	5.79			
Academic degree	Doctoral	9.15	5.461	-0.584	0.128	0.21
	Masters or less	9.86	5.588			
Involvement in childcare	No	9.21	5.506	-0.715	0.044	0.083
	Yes	10.06	5.547			
Involvement in caregiving for older adults or other family members	No	9.37	5.506	-1.105	-0.134	.012*
	Yes	10.14	5.547			

Note. Number of the 19 support items refers to the number of items chosen as positively needed. ANCOVA was performed with demographic characteristics as fixed factors and all other factors as covariates. * $p < .05$.

Table 3. Logistic Regression Analysis of the Relationship Between Demographic Characteristics and Each Item (n = 997)

	Younger or older [†]			Involvement in caregiving for older adults and other family members [‡]		
	OR	95% CI	p value	OR	95% CI	p value
1. Research grant related to the COVID-19 pandemic	1.008	0.752–1.402	.961	1.339	0.932–1.924	.114
2. Financial assistance for people who cannot start or continue studies abroad because of the COVID-19 pandemic	1.139	0.804–1.613	.465	1.251	0.829–1.781	.318
3. Cooperation for surveys by JANS members (requests and distribution of survey forms)	1.507	1.083–2.096	.015 *	1.154	0.800–1.664	.444
4. Making surveys conducted by JANS available as open-source data	1.526	1.099–2.120	.012 *	1.050	0.732–1.505	.792
5. Increasing online seminar and workshop opportunities	1.298	0.844–1.994	.235	1.057	0.663–1.686	.814
6. Increasing online opportunities for exchange and consultation between JANS members (forums, mailing lists, and private groups on social media)	1.589	1.140–2.214	.006 *	1.509	1.050–2.170	.026 *
7. Forming online journal clubs	1.319	0.952–1.827	.096	1.633	1.141–2.337	.007 *
8. Forming online research meetings	1.389	1.004–1.922	.047 *	1.4	0.978–2.004	.066
9. Building online systems for individual consultation related to research	1.14	0.821–1.584	.434	1.247	0.863–1.802	.239
10. Sharing cases of remotely and effectively conducted joint research	1.416	1.024–1.958	.036 *	1.809	1.255–2.609	.001 *
11. Sharing cases of successfully conducted research while working from home during the COVID-19 pandemic	1.563	1.126–2.168	.008 *	1.633	1.137–2.345	.008 *
12. Sharing cases of study management that effectively handled the impacts of the COVID-19 pandemic	1.428	1.035–1.970	.030 *	1.450	1.014–2.073	.042 *
13. Training on study methods that can be implemented during crises, including the COVID-19 pandemic	1.671	1.203–2.319	.002 *	1.428	0.994–2.053	.054
14. Training on effective teaching methods during the COVID-19 pandemic	1.243	0.823–2.205	.253	1.455	0.952–2.222	.083
15. Building networks to promote continuity between research and teaching, practice, and policy in situations of serious health problems, including the COVID-19 pandemic	1.471	1.062–2.042	.020 *	1.248	0.871–1.790	.228
16. Recommendations on research during the COVID-19 pandemic for organizations that members are affiliated with	1.457	1.056–2.011	.022 *	1.154	0.807–1.650	.432
17. Recommendations on education during the COVID-19 pandemic for organizations that members are affiliated with	1.205	0.870–1.669	.261	1.113	0.777–1.595	.558
18. Recommendations on working styles during the COVID-19 pandemic for organizations that members are affiliated with	1.333	0.961–1.849	.085	1.399	0.972–2.012	.070
19. Recommendations to promote ICT proficiency in educators for organizations that members are affiliated with (e.g., employment of ICT support staff)	1.148	0.826–1.595	.411	1.236	0.856–1.785	.258

Note. Covariance: † Gender, Position, Academic degree, Involvement in childcare, Involvement in caregiving for older adults or other family members;

‡ Gender, Age, Position, Academic degree, Involvement in childcare.

Reference: † Older; ‡ No. * $p < .05$.

Abbreviations: JANS, Japan academy of nursing society

Table 4. *Analysis Results of Open-ended Comments (n = 56)*

Category	Subcategory
Recommendations for work systems and employment patterns	Recommendation for telework
	Securing staff resources and maintenance of operations
Lobbying for revision of regulations on research implementation	Support in information management
	Research grants and financial support
Support for balancing social roles and family	Support for female researchers
	Support for balancing work and family life
Support for the promotion of research and educational activities	Support for the use of online systems
	Support for research methods
	Organizing training sessions
Support for collaboration and information sharing with other organizations	Create systems for collaborative research
	Provide a forum for sharing the current situation through case studies, etc.