

# Collaboration between Atomic Bomb Casualty Commission (ABCC) scientists and midwives in the ABCC genetics survey: An examination of the 1951 ABCC minutes

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**Abstract :** The genetics survey conducted in Japan by the Atomic Bomb Casualty Commission (ABCC) was the largest health survey conducted during the post-war occupation. The purpose of this study was to examine the collaboration between ABCC scientists and Japanese midwives in the genetics survey by reviewing the 1951 ABCC minutes. ABCC scientists and midwives routinely communicated, with scientists considering questions and proposals from midwives throughout the survey. The ABCC scientists adjusted their approach based on these proposals, taking into account the detailed opinions of midwives and their representation of the mothers' feelings. The midwives' delivery reports were essential for the success of the genetics survey, and they advocated for and represented the feelings of the participating mothers and families. Thus, the midwives were able to voice their opinions freely to ABCC scientists as their equals. ABCC scientists reciprocated by making efforts to build close collaborative relationships with midwives by creating a system that made it easy for midwives to speak their minds.

## 1. Study background

The Atomic Bomb Casualty Commission (ABCC) was established during the post-World War II United States (US) and Allies' occupation in Japan to investigate the effects of atomic bomb radiation on health, and their work continued after the occupation ended. Among their activities, the genetic survey, which was conducted between March 1948 and February 1954, was the largest health survey conducted during the early years of the ABCC, including approximately 76,000 children. James V. Neel, who was a lieutenant in the US Army Medical Corps and a member of the ABCC preparatory team, planned the survey. He later became a professor of human genetic and internal medicine at the University of Michigan Medical School. Neel explained that the survey aimed to investigate the outcomes of

all pregnancies in parents who lived in Hiroshima and Nagasaki at the atomic bombing to assess the degree of genetic damage by determining whether the rate of congenital malformations increased.<sup>1)</sup> The following is the overview of this genetic survey: expectant mothers in their fifth month of pregnancy went to the Hiroshima City office to register their pregnancy, receive special rations, and undergo blood testing. They filled out a questionnaire prepared by the ABCC, which sought information regarding the identity of the mother and father, a detailed account of their atomic bomb exposure, and their history with pregnancies. The mother and the ABCC kept one copy each. The genetic survey involved Japanese physicians, nurses, and midwives. Midwives were responsible for filling out part of the questionnaire at the time of delivery and notifying the ABCC regarding

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pregnancy outcomes, including termination, stillbirth, or premature infant death. A midwife promptly informed the ABCC when a baby had an abnormality at birth. In cases of stillbirth and death immediately following birth, the ABCC performed an autopsy or an examination. Midwives were remunerated for each birth they reported to the survey program. Despite their experience as midwives, it was difficult for them to explain congenital malformations in sufficient detail to meet the ABCC's expectations.<sup>2)</sup> Therefore, doctors and nurses from the ABCC visited mothers and their babies in their homes and checked the records.

The author previously studied the activities of doctors and nurses who worked for the ABCC and investigated how they visited the homes of families with infants in the genetic survey.<sup>3)</sup> Although our previous study described some of the instructions midwives received from the ABCC,<sup>4)</sup> details regarding their activities remained unclear.

In the present study, we investigated the 1951 ABCC minutes in the William J. Schull Collection, which mentioned ABCC scientists and the midwives involved in the genetic survey. Therefore, we aimed to shed light on the collaboration between ABCC scientists and midwives based on the 1951 minutes to understand the involvement of midwives in the ABCC genetic survey. Although this study focuses on the unique experience of midwives involved in the genetic survey conducted by the ABCC, the findings suggest that their experience could have significant implications for establishing a framework for continuous nursing support of the care of radiation victims in the future. Furthermore, the experience of midwives providing nursing support for radiation victims in the unique environment of the Allied occupation, as investigated by the ABCC, is invaluable and should, by all means, be recorded.

## II. Methods

### 1. Study design

This study consisted of historical research, where events in the past were systematically collected, critically evaluated, and interpreted.<sup>5)</sup> Several methods for conducting historical research are performed. For this study, we referred to historiography,<sup>6)</sup> which was edited

by the History Group of the College of Arts and Sciences at the University of Tokyo. We searched for historical reference materials from archives, collated and stored them, and subsequently conducted a critical review to determine the facts through careful reading and accurate interpretation. Historical reference materials included letters, documents, and diaries written by concerned individuals (primary references) and the same type of materials written by third parties during the same or a later period (secondary references). Precedence was provided to primary references.<sup>6)</sup> In historical research, it is significant to critically examine the sources of information by prioritizing materials left by the parties involved, providing priority to sources that are temporally close to the events, and carefully scrutinizing the credibility of the authors from the perspectives of their interests and the consistency of their testimonies.<sup>6)</sup> To ensure accurate reading and interpretation of historical materials, this study mainly focused on primary sources, including ABCC official documents and letters from ABCC scientists involved in the genetic survey, while also considering critical perspectives on historical materials mentioned earlier.

### 2. Subject years

We investigated the period from 1947, when the ABCC was established, to 1953, when the genetic survey was completed.

### 3. Analyzed references and sources

The following were the primary references used: William J. Schull Paper, Box 26 Folder 2, and William J. Schull Paper, Box 26 Folder 4 Historical Remembrances and Reflections held by McGovern Historical Center at the Texas Medical Center Library in their Archives & Rare Book Collections; GHQ/SCAP records; and PHW sheets, including Daily Journal and ABCC Annual Report conducted by the National Diet Library. Secondary references included Books by William J. Schull and James V. Neel, Almanacs prepared by the Japanese Nursing Association, and general reports published by the Radiation Effects Research Foundation.

#### 4. Analysis methods

Analysis was performed using the following steps: first, historical materials were collected considering the research purpose. Second, a catalog of the collected materials was created for storage and organization. Parts of the historical materials related to the genetic survey, midwives, collaboration, proposals, and coordination details from the collected materials were extracted and analyzed. Extracted data were subsequently considered and critically interpreted by author. During this process, experts in English translation and proofreading were consulted to ensure an accurate interpretation of the analytical materials. Additionally, to ensure reproducibility in terms of reliability and validity, citations, including the location of the sources, were explicitly provided.

#### III. Ethical considerations

Although we used historical materials on the ABCC that have been published or released to the public with the permission of libraries and other facilities, we took great care not to infringe on copyrights or damage the character or reputation of the individuals mentioned in these documents.

#### IV. Results and discussion

This study aimed to investigate the collaboration between the ABCC and midwives during the genetic survey; thus, we searched for official ABCC documents and official and private correspondence between scientists and midwives. However, no documents written by midwives could be identified. Therefore, we focused on results shown from ABCC official documents and

Table 1. List of primary references regarding collaboration between ABCC scientists and midwives

No.	Publication Date	Author	Primary Reference Title	Location
1	13 October 1947	Author unknown	Daily journal, The Genetic Program of the Atomic Bomb Casualty Commission	National Diet Library GHQ/SCAP records, PHW sheets, PHW01005
2	21 February 1951	Wright TGA	Suggestions made by Hiroshima midwives	McGovern Historical Center, Texas Medical Center Library, William J. Schull, PhD Papers; MS 067 Box26 Folder 2
3	November 1953	Hiroshima-city midwife association	Membership list of the Hiroshima-city midwife association as of October 27th, 1952 [Syowa 27 nen 10gatu27nichi genzai Hiroshima-shi josanpukai kain meibo]	McGovern Historical Center, Texas Medical Center Library, William J. Schull, PhD Papers; MS 067 Box26 Folder 2
4	22 September 1951	Author unknown	Tentative answers to questions submitted by midwives previous to meeting of Sep. 22 1951	McGovern Historical Center, Texas Medical Center Library, William J. Schull, PhD Papers; MS 067 Box26 Folder 2
5	22 September 1951	Wright TGA	Report on meeting of midwives' association at Hijiyama	McGovern Historical Center, Texas Medical Center Library, William J. Schull, PhD Papers; MS 067 Box26 Folder 2
6	1950	Atomic Bomb Casualty Commission	Annual Report, Administration and General Service, Relationship with Occupation Forces, 1 January 1950 through 31 December 1950	National Diet Library GHQ/SCAP Records, PHW Sheets, PHW01725
7	1997	Neel JV	Historical remembrances and reflections	McGovern Historical Center, Texas Medical Center Library, William J. Schull, PhD Papers; MS 067 Box26 Folder 4
8	8 October 1951	McDonald DJ	Telephone calls concerning infant deaths	McGovern Historical Center, Texas Medical Center Library, William J. Schull, PhD Papers; MS 067 Box26 Folder 2
9	22 September 1951	Author unknown	Midwife's Association Meeting, Hijiyama	McGovern Historical Center, Texas Medical Center Library, William J. Schull, PhD Papers; MS 067 Box26 Folder 2
10	7 October 1952	McDonald DJ	Meeting of Midwives at ABCC; October 7 1952	McGovern Historical Center, Texas Medical Center Library, William J. Schull, PhD Papers; MS 067 Box26 Folder 2

correspondence from scientists. Facts regarding the following became clear: (1) the coordination process between ABCC scientists and midwives, (2) suggestions from midwives and coordination outcomes, and (3) mutual collaboration was essential to conduct the genetic survey. A list of primary references regarding the collaboration between ABCC scientists and midwives that we used in this study is presented in Table 1. Their collaboration is described further on the basis of the abovementioned three points.

### 1. Coordination process between ABCC scientists and midwives

Schull stated that most of the communication between ABCC scientists and midwives was conducted through the Midwives' Association chairperson.<sup>7)</sup> Moreover, he mentioned that the ABCC explained the changes they made in response to proposals in regular meetings of the Midwives Association, where they also discussed related issues and findings. However, the following was written in a letter from a local coordinator of the ABCC's Genetics Department dated February 21, 1951, addressed to Duncan McDonald, a scientist in the same department: the following suggestions that were made by midwives in Hiroshima were revealed by means of routine contact with the midwives, along with questions asked at a district meeting of midwives, which was attended by a district supervisor from this section.<sup>8)</sup> This clearly shows that the ABCC regularly communicated with midwives during the genetic survey and that ABCC local coordinators attended local meetings of midwives to gather their opinions. The Hiroshima City Midwives Association Members list dated October 27, 1953<sup>9)</sup> showed that Hiroshima was divided into 17 areas and that each area had its own secretary. From this information, we presume that the ABCC ascertained detailed proposals and questions regarding the genetic survey through the ABCC local coordinator who had the opportunity for daily contact with midwives.

We shall examine how reporting and discussions regarding questions and suggestions from midwives took place within the ABCC sections. Although the exact date of circulation is unclear, we observed a note perused in 1951, entitled "Tentative answers to questions

submitted by midwives previous to Meeting of Sep. 22".<sup>10)</sup> This revealed that the scientists in the Genetics Department received English reports regarding questions and suggestions raised by midwives on February 21, 1951 and considered answering on the basis of the report. The answer was delivered on September 22, 1951 during a meeting at the ABCC in Hijiyama, Hiroshima City, which was attended by midwives from Hiroshima, ABCC Genetics Department staff, and a national tax survey officer.<sup>11)</sup> The minutes of the meeting were stated and translated by Dr. Koji Takeshima, with introductory remarks followed by an explanation of the new schedule of payment, which was circulated to the midwives (see attached forms, English and Japanese).<sup>11)</sup> This revealed that Dr. Koji Takeshima provided translation for the ABCC, and they distributed documents in both English and Japanese. As the ABCC had translation/interpretation staff who were well versed in medicine, sociology, economy, and political situations,<sup>12)</sup> we presume that the ABCC responded to questions and proposals from midwives with the assistance of such professionals.

### 2. Suggestions from midwives and coordination outcomes

As previously mentioned, the letter, which was dated February 21, 1951, addressed to McDonald<sup>8)</sup> also reveals that the local coordinator for the ABCC received 13 questions and proposals from midwives. Table 2 presents a compilation of 12 proposals and question related to this study, along with ABCC's responses to 13 proposals and questions suggested by midwives in the meeting held on September 22, 1951, as mentioned in its minutes. It should be noted that the author deleted and processed personal names that were not mentioned in the original document.

Those questions and proposals are categorized into the following: (1) pregnancy registration, (2) genetic survey implementation, (3) method of report submission and communication with midwives, (4) genetic survey subjects, (5) remuneration, and (6) others. Neel mentioned two objectives for the meeting with midwives during the genetic survey. The first was to ensure that the survey program was understood, and the second was

Table 2. Proposals and questions from midwives and ABCC's responses at the Genetics Survey Meeting in 1951

No.	Proposals and question from midwives	ABCC's responses
1	Provision of scales to novice midwives.	Scales will be issued to them, and doctor from the Genetics Department will visit them to explain about forms, procedures, etc. Mrs. Yamamoto will inform us of all new midwives registering with the Association. In addition, Mr. Wright undertook to standardize the scales, issued by ABCC, now in use.
2	Midwives wish to be informed of autopsy findings.	All autopsy findings will now be reported directly to midwife obtaining body (this program will go into effect Oct. 1st.)
3	All infants not examined by ABCC. Why?	This refers to 9-months clinic. We can't handle all, take a large (70-80%) random sample. But if a midwife wishes a particular child to be seen, she has only to let us know (preferably through a letter of introduction) and we will have it brought in.
4	Are pregnant women compelled to consult a doctor after 8 months? They pointed out that the city health center had recently begun issuing to all women registering a letter of introduction to a doctor.	We don't know. A city matter. Shall try to find out.
5	Because of the cost of blood tests, some persons in poor areas do not register. In this event, the midwife personally registers the pregnancy with ABCC, but would prefer ABCC personnel to visit the home in order to do this.	We would like the midwives to report all these to us, and ABCC personnel will interview the parents, register the pregnancy. Inform district office whenever a case comes up. But can't take blood test then (possibly illegal; and when word got about, many more who ordinarily would register with the city would come our way. If registered with us before birth, treat as a registered pregnancy).
6	How to report country births when pregnancy registered in city, and city births when pregnancy registered elsewhere?	Unless mother returns, ignore first. In the second case, report to us for registration as in Q. 5; or report the termination.
7	Request that letters of introduction by midwives to recognized by ABCC.	They are recognize on an equal basis with those submitted by doctors. But we can't possibly see all patients recommended. The letters are referred to the department concerned, and the selection made there of whom is to be seen.
8	Request that an explanatory note be attached to payments made to the midwives by ABCC.	(Mr. Wright) This will be done in any case where confusion might arise. But where payments follow normally according to the terminations reported, no explanation should be necessary.
9	Request less time lapse between termination and examination by doctors.	Processing of reports takes time; and we wait until several are reported from one district to cut down amount of travel-time for our teams. Shall try to speed it up, consistent with previous decision not to take blood until 3 weeks after termination.
10	Requests a procedure in reporting a case when a midwife's patient is transferred to a doctor at the request on the patient.	Midwives not to worry about these. We get reports from the doctors, or pick the, up as Overdue.
11	Requests for a revised report pick-up schedule procedure for midwives who may not be at home (for ABCC convenience); and for fewer regular visits by district supervisors to the midwives to discuss problem.	(Mr. Wright) The present schedule is not inconvenient to us, and although we regret not meeting the midwife, we are able to pick up any reports they may have collected. The regular visits of district supervisors will now be cut down to one in three months. Those are purely a service to the midwives, and will be ruled by their convenience.
12	Mothers complain that ABCC performs blood tests on adults and infants without first obtaining permission of the individual or parent.	Clinic nurses have been asked to obtain such permission; and our nurses in the field will do so also.

to discuss any issues with the program.<sup>13)</sup> The minutes analyzed were from 1951, 4 years after the start of the genetic survey, and we believe that sufficient details on various problems in the program were discussed. First, we discuss items that received several questions and proposals; subsequently, we consider the discussion that helped midwives understand the program.

1) Problems of the program in terms of genetics research  
 Among the discussions held about the problems in the program, the following three matters were mentioned: (1) pregnancy registration, (2) genetic survey implementation, and (3) submission of reports and communication with midwives. Regarding pregnancy registration, in the meeting dated February 21, 1951,<sup>8)</sup>

midwives reported the following cases: legal marriage between a Japanese and a Korean, refusal to register with the ABCC, informal marriage or non-registration due to poverty, rural women who were unaware that they should register with the ABCC, women who did not register with the ABCC, or women who submitted their birth registration outside of the city. An opinion of a midwife was recorded as “Owing to the cost of blood tests, a number of persons in poor areas do not register. In this event, the midwife personally registers the pregnancy with the ABCC but would prefer that the ABCC personnel go to the homes of these persons to obtain the necessary information”,<sup>8)</sup> “Due to economic problems, we would very much appreciate it if pregnant women could receive blood tests at the ABCC if possible. The amount they charge in hospitals is too expensive”.<sup>11)</sup> A midwife reported a woman who did not register her pregnancy owing to financial challenges and the high cost of blood tests in Japanese hospitals, and she suggested that the ABCC performs blood tests for those who did not register with the city in the same way as for those who registered. The ABCC’s response was “We would like the midwives to report all these to us, and an ABCC personnel will interview the parents and register the pregnancy. Inform the district office whenever a case comes up. However, blood tests cannot be taken (possibly illegal; and when word got about, many more who ordinarily would register with the city would come our way. If registered with us before birth, treat as a registered pregnancy)”.<sup>11)</sup> Although the ABCC encouraged midwives to promote pregnancy registration, they declined to take blood samples on the spot, citing illegality. We can surmise the reason for this decision based on the GHQ policy. On November 1, 1945, in the directive issued by the GHQ to General MacArthur, “Basic Initial Post Surrender Directive to Supreme Commander for the Allied Powers for the Occupation and Control of Japan”, they stated the policy of medical treatment and aid for the general public, which was to not only seek fairness and equality but also to prohibit direct provision unless necessary for the military.<sup>14)</sup> The ABCC probably made its decision based on that policy.

Regarding genetic survey implementation, midwives weighed babies to record the information in reports to

the ABCC, and newly joined midwives requested the loan of scales.<sup>8)</sup> In the minutes of the meeting dated February 21, 1951,<sup>8)</sup> regarding the loaning of scales by the ABCC, it was stated that “During 1949, this section investigated the weighing equipment used by the midwives in Hiroshima; as a result of the investigation, all registered midwives were supplied by the ABCC with standard equipment. It is suggested that a stock of this equipment be retained by the ABCC and issued to each newly registered midwife. By this means, the problem of inaccuracy as encountered during the early stages of the program would be averted at small costs”. The background behind the provision of scales is that Japan used “Shakkanho” for measuring weight until 1951 when the Measurement Law was enacted<sup>15)</sup>; therefore, we presume that those units had to be unified. Schull, who prepared the questionnaire, mentioned that the program required the Japanese *momme* to be converted into grams.<sup>16)</sup> Based on his memoirs, we assumed that the ABCC provided scales to standardize figures for statistical analysis.

Regarding the submission of reports and communication with midwives, midwives submitted the completed report to the ABCC and received payment. A midwife made a proposal regarding the way reports are submitted, which was recorded as “Requests for a revised report pick-up schedule procedure for midwives who may not be at home (for ABCC convenience)”,<sup>11)</sup> and the proposal was completed. Consequently, it was suggested that midwives, who provide professional care during home births, were frequently not included; therefore, it was challenging for them to receive reports at the right time. Telephone calls were another method for communicating with the ABCC, particularly in cases where a midwife encountered stillbirth, significant abnormality, or death of a newborn baby.<sup>16)</sup> However, midwives expressed their concern regarding the difficulty in communicating with the ABCC by phone, such as when a local coordinator called while a midwife was out or when the ABCC called a midwife when the midwife had no report document available. Reports from midwives were essential to the program. After hearing such concerns, the ABCC considered how to respond to telephone calls from midwives outside the business

hours of the Genetics Department (e.g., weekends, public holidays, and between 16:30 and the following 08:30 on weekdays) as shown in the minutes entitled “Telephone calls concerning infant deaths”, which was developed for the interdepartmental meeting on October 8, 1951.<sup>17)</sup> The ABCC was quick to discuss and respond to the concerns of midwives regarding telephone calls, with the need to improve the accuracy of their reports being a possible driving force. Conversely, while the ABCC provided compensation to midwives and made efforts to collect data during the perinatal period, there were conflicts with midwives who respected the wishes of families and did not want stillborn infants to be autopsied at the ABCC, thereby resulting in delayed or incomplete reports. (pp.83–101)<sup>4)</sup> In the meeting dated September 22, 1951, along with questions and proposals, there was a description stating “Dr. Takeshima again emphasized our desire to hear of all deaths within a year of birth”,<sup>11)</sup> suggesting that the ABCC had once again emphasized the mandatory reporting of stillbirths and deaths to ensure accurate data collection, and had requested the cooperation of midwives.

## 2) The discussion that helped midwives understand the program

During the discussion held to promote the understanding of the program by midwives, questions and suggestions were made by the midwives under the following subjects: (4) genetic survey subjects, (5) remuneration, and (6) others. Regarding genetic survey subjects, a midwife asked “All infants not examined by the ABCC. Why?”<sup>11)</sup> “This refers to the 9-month clinic. We cannot handle all; take a large (70–80%) random sample. However, if a midwife wishes a particular child to be observed, she only has to let us know (preferably through a letter of introduction), and we will have it brought in”<sup>11)</sup> and the ABCC responded.

This response suggests that the ABCC explained that an examination would be performed if there was a request from a midwife; however, it was strongly emphasized that the survey was only for research. We presume that the ABCC was ensuring that midwives understood that they were involved in a research study. Regarding remuneration, a midwife requested an explanation regarding the payment,<sup>11)</sup> to which the

ABCC explained that they would handle it to avoid confusion. Moreover, the material that clearly stated the amount of the reward in Japanese was included in the materials for the meeting on October 8, 1951,<sup>18)</sup> suggesting that they had ensured that there was no confusion by providing it in writing.

Regarding other matters, a midwife expressed the opinion that “Mothers complain that the ABCC performs blood tests on adults and infants without first obtaining permission of the individual or parent”.<sup>11)</sup> Participants and their families complained about not obtaining consent for the ABCC’s blood tests. Regarding obtaining consent, the Nuremberg Code was introduced in 1947 following the judgment on Nazi Germany for performing human experimentation, and it became an international ethical standard. The first principle states as follows: “The voluntary consent of the human subject is absolutely essential. (...) the person involved (...) should have sufficient knowledge and comprehension of the elements of the subject matter involved as to enable him to make an understanding and enlightened decision”.<sup>19)</sup> The ABCC responded to the opinion of the midwives by stating “Clinic nurses have been asked to obtain such permission; our nurses in the field will do so also”.<sup>11)</sup> Although there was no discussion on specific cases where consent was not obtained in the minutes, the ABCC adopted a stance of endeavoring to comply with ethical guidelines even during the occupation. Furthermore, “It was emphasized that mothers dislike the idea of ‘autopsy’ and suggested that they be told simply that the body is to be ‘examined’”. This was agreed upon.<sup>11)</sup> It was also revealed that midwives proposed considering the mother’s feelings. ABCC scientists showed their agreement with the midwives’ proposal.<sup>11)</sup> Therefore, we believe that the midwives had a role in expressing opinions that consider the feelings of the participants and their families during the meeting.

## 3. Mutual collaboration was essential to conduct the genetic survey

As previously mentioned, midwives expressed their opinions to ABCC scientists not only on minor questions and improvement points related to the implementation of the genetic survey but also on ethical issues, including

proposals that considered the feelings of mothers and consent for examinations. Although the survey was conducted during the occupation, midwives were on the same level as ABCC scientists in freely expressing their views. The proposals of midwives were carefully considered within the ABCC, and the program was adjusted in consideration of the opinions of midwives. This shows that the genetic survey could not proceed without the reports of midwives, who looked after home births, and that the ABCC had to adjust the program to cater to the opinions of midwives. In a letter dated October 7, 1952, McDonald made reference to the collaboration with midwives as follows: "More important than the discussion of such problems is the feeling of association with the ABCC we hope the midwives will continue to have as a result of such personal contacts. It provides them an opportunity to present any complaints they themselves may have or which they have heard voiced by mothers who have been visited by the ABCC. Furthermore, it enables us to access the amount of cooperation we may expect to have during the coming year".<sup>20)</sup> From the contents of this record, it can be inferred that the background to the ABCC's ongoing discussions with the midwife association was an opportunity to hear the complaints that midwives had and the voices they heard from mothers. The dependence of the genetic program on the midwife association is immeasurable, and it is essential to maintain close and intimate coordination with the entire midwife association. ABCC scientists believed that to achieve the purpose of the genetic survey, they needed to collaborate with midwives by creating relationships that make it easy for midwives to express their opinions through careful consideration.

This study aimed to investigate the collaboration between the ABCC and midwives, however, there were limitations regarding the historical materials available regarding Japanese midwives. Therefore, a detailed analysis of midwives' intentions in collaborating with the ABCC was not possible, which was one of the limitations of the present study. However, as we can observe from the proposals they made to the ABCC, as recorded in the minutes and in the statement of McDonald, they played the role of an advocate for

families, including mothers.<sup>20)</sup> We believe that midwives enabled the genetic survey by repeatedly making proposals and adjustments. In the future, it will be necessary to continue collecting and analyzing historical materials related to midwives and explore the actual collaboration between ABCC scientists and midwives by examining the historical materials of the respondents in the genetic survey.

## V. Conclusion

In the genetic survey, ABCC scientists and Japanese midwives routinely communicated with each other regarding questions and proposals, both in their day-to-day communication and in meetings, and the ABCC announced adjustments in meetings to continue the collaboration. Proposals from midwives ranged from detailed suggestions for the survey to representing the opinions of mothers and families.

As midwives' delivery reports were significant for the genetic survey and midwives advocated and represented the feelings of mothers and families participating in the survey, they were able to voice their opinions freely to ABCC scientists as their equals, despite being under the occupation. Meanwhile, ABCC scientists endeavored to build close collaborative relationships with midwives by creating an environment that made it easy for midwives to speak their minds.

Although we intended to shed light on this collaboration from the perspective of both parties, since historical materials regarding Japanese midwives are scarce, we were limited in this study in our ability to analyze the views of midwives in detail. In the future, the collection and analysis of historical materials regarding midwives of the time should be continued, and the collaboration between ABCC scientists and midwives should also be further evaluated. Additionally, to further explore the actual collaboration between ABCC scientists and midwives, historical records regarding respondents in the genetic survey should be examined.

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## Conflicts of interest

I have no financial relationships to disclose.

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