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Original Research**The difficulty of professional continuation among women doctors in Japan: A qualitative study of alumnae of 13 medical schools in Japan**

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4 Abstract (290)

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7 **Objectives:** To investigate the difficulties Japanese female doctors face in continuing
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9 professional practice.

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12 **Design:** A qualitative study by using the Kawakita Jiro method.

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16 **Setting:** A survey of 13 private Japanese medical school alumni associations conducted in
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18 2011.

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22 **Participants:** 359 female doctors

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25 **Primary outcome measures:** Barriers of balancing work and gender role.

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28 **Results:** The female doctors reported that professional practice was a struggle with long
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30 working hours due to a current shortage of doctors in Japan. There was also a severe
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32 shortage of child-care facilities in the workplace. Some women appeared to have low
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34 confidence in balancing physician's job and personal life, resulting in low levels of
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36 professional pursuit. There appeared to be two types of stereotypical gender roles including
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38 one expected from society like "child rearing is a women's job", and the other perceived by
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40 their own that some women had a very strong desire to raise their own children. Male and
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42 some female doctors who were single or older were perceived to be less enthusiastic about
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44 supporting women who worked while raising children because the coworkers feared that
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3 they would have to perform additional work as a result of the women taking long periods of
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7 leave.

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10 **Conclusions:** Important factors identified in promoting the continuation of professional
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12 practice among female doctors in Japan was the need to improve working conditions
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14 including long working hours and nursery shortage, and to introduce educational
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16 interventions to clarify professional responsibilities and redefine the gender division of
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18 labour for both male and female doctors. In addition, we identified a need to modernize the
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20 current employment practices by introducing temporary posts to cover maternity leave and
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22 introduce flexible working during specialist training thus supporting and encouraging more
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24 women to continue their medical careers.
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Strengths and limitations of this study

- A qualitative study based on 359 female doctors revealed that barriers of balancing work and gender role were mainly poor working conditions including long working hours due to physician shortage and nursery shortage, and stereotypical gender role.
- There appeared to be two types of stereotypical gender roles including one expected from society like “child rearing is a women’s job”, and the other perceived by their own that some had a very strong desire to raise their own children.
- Male and some female doctors who were single or older were perceived to be less enthusiastic about supporting women who worked while raising children because the coworkers feared that they would have to perform additional work as a result of the women taking long periods of leave.
- The limitation of this study includes textual analyses using the KJ method, which may not have thematically saturated data.

Introduction

According to the Global Gender Gap Report, Japan was ranked 105th out of 135 countries on gender equality¹, and on female participation in the labour force and political participations (i.e., percentage of women in parliament, ministerial positions) and have the lowest percentage of females in the workforce among the Organisation for Economic Co-operation and Development (OECD) countries.² The number of female doctors in Japan today are comparable with where the US was over twenty years ago, with only 18.9% (55,897) of all physicians³ being female. Given the critical shortage of doctors in Japan, it is worth considering why there are so few female doctors practicing and what can be done to increase this number.

Previous research has shown that women physicians in Japan work fewer hours, retire earlier, and are more likely to be professionally inactive compared to their male counterparts.⁴ A survey of 711 Japanese women physicians revealed that 55% had resigned from full-time positions at least once, and only 30% of these women returned to full-time employment.⁵ It is known that women in Japan often stop working in their 30s after having children and then return to the workforce after they have finished raising their children. This work pattern, which has been described as an “M-shaped curve” representing rates of

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3 participation in the labor force by age, is characterized by peaks in the early 20s and late
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6 40s combined with a trough in the early 30s.⁶
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10 This pattern has interestingly not been observed in any other country except Japan and
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12 Korea. Indeed, such low participation among the younger female generation may not be
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14 fully explained by child-rearing. First, gender-role stereotype is embedded into the
15
16 Japanese cultural systems, beliefs, and behaviors; meaning that men and women tend to
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18 follow their specific gender roles and that women believe they should stay at home to take
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20 care of family responsibilities while men should go out to work. According to a public
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22 opinion survey in 2013, conducted by the Japanese government,⁷ 50 % of respondents in
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24 their 20's agreed with the stereotyping gender role while 46.6% disagreed and the rest
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26 answered that they did not know. Second, in our previous study based on 1,684 women
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28 physicians, we demonstrated that more women than men significantly experienced gender
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30 discrimination related to professional advancement,⁸ and doctors with the strongest
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32 perception of gender-based career obstacles were more likely to work part-time rather than
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34 full-time.⁹
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49 Hence we attempted to explore the factors that make it difficult for female doctors to
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51 balance professional development with gender role responsibilities using a qualitative
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3 approach.
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9 10 **Methods**

11 12 *Subjects*

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15 This cross-sectional study was based on a survey of alumnae who had previously trained
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17 at one of 13 private medical schools. The study was conducted between June 2009 and May
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19 2011. Japan has 80 medical schools, 29 of which are private. The present study was jointly
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21 sponsored by the Council of Private Medical School Alumni Associations, the Ministry of
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23 Education, Science, Sports, and Culture, Grand in Scientific Research and the Pfizer Health
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25 Research Foundation and targeted at female doctors.
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34 The aim was to identify the challenges of having a good work-life balance. All of the 18
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36 schools in the eastern region of Japan were targeted, and 13 agreed to participate in the
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38 study. In total there were 9,544 female alumnae registered in the 13 alumni associations.
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40 We sent an invitation letter to these women via email. The exact response rate is difficult to
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42 determine as many of the emails were no longer used, however, 2,029 alumnae responded
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44 with written informed consent to take part in the study. Of those that agreed to take part,
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46 1,684 answered a self-administered questionnaire (response rate to the informed consent:
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3 83%).
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6 We included a single open-ended question soliciting participants' thoughts about the
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8 challenges of balancing professional work development with gender role responsibilities.
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10 The question had no word or page count limit. The questionnaire also included basic
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12 demographics, marital status, numbers of children, work status (i.e.,
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14 full-time/part-time/unemployed), worksite (university hospital/hospital/clinics/others) and
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16 questions about any experience of gender inequality in career opportunities and questions
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18 about any perception of gender-based obstacles.
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28 The study protocol was approved by the Institutional Review Board of Teikyo University
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30 School of Medicine (No. 08-107).
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37 *Theoretical perspective*

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39 Our study draws on a constructivist perspective, recognizing that this study listens to the
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41 social constructions and meaning making of the study participants and as researchers we
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43 bring our own interpretation reflecting that some of us are trainee and other senior
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48 clinicians, male and female and living within the same culture as the study participants and
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51 others are non-clinicians, with a gender mix, living outside Japan in a western culture.¹⁰ We
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4 recognize that we are involved in the process of making new social constructions that result
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7 from the perspective of both the researcher and research object to form new constructions.¹¹
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10 11 12 13 *Kawakita Jiro (KJ) Method* 14

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16 The responses to the open-ended question were analyzed qualitatively using the Kawakita
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18 Jiro (KJ) method,¹² which was developed by Jiro Kawakita (a Japanese anthropologist). It
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20 is also called an affinity diagram that helps to synthesize large amounts of data by finding
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22 relationships between ideas and is suited to a constructivist perspective.
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28 Six researchers including two coauthors (KN and YK) and two male medical students with
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30 different ages, marital status, and employment status analyzed the data. Firstly, we all
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32 initially reviewed respondents' comments as a working group and divided the comments
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34 into 1,322 fragments, each of which had only a single meaning (e.g., miscarriage following
35
36 long working hours, depression following over work); these were recorded individually on
37
38 cards. Second, we spread the cards out on a table and grouped them according to the
39
40 similarity of the comments they presented or the context in which they appeared in the
41
42 initial transcript (e.g., poor working condition). Third, we discussed the shared meaning of
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44 each of the sorted groups and wrote the main theme description for each group on a blank
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4 card and placed this at the top of the group. Following this, we grouped the themes until we
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6
7 had reached the broadest, but still a meaningful, category. Forth, we drew lines connecting
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10 the themes using an interactive process of discussion and consensus. If anyone disagreed,
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12
13 we negotiated around a provisional domain of categories. This process continued until all
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16 the data was classified under one of the categories. Every process was performed together
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19 by the six researchers.
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25 **Results**

26 *Participant characteristics*

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31 Of the 1,684 participants who returned questionnaires, this analysis focused on the 359
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34 (21%) who provided answers to the open-ended question about continuing to work and deal
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37 with the challenges of developing their careers; 78% of this group were married, 91% were
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40 working as clinical physicians at the time of the study, 60% worked full-time and 35%
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43 worked part-time, and 264 (74%) had children. The median age (inter-quartile range) was
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46 45 years and the age range was from 38 years to 53 years.
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53 *Overview of qualitative analysis*

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3 The KJ method yielded 5 domains
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- 6
7 1) Poor working condition with poor child support (184 cards)
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10 2) Low levels of professional pursuit (96 cards)
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13 3) Lack of understanding in the workplace and harassment (132 cards)
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16 4) Stereotypical gender roles (255 cards)
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19 5) Switch from full-time to part-time labor and consequent career stagnation (157 cards)
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26 Below we describe the factors that these female doctors identified as barriers to their
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28 professional development while also having stereotypical gender role responsibilities and
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30 discuss how these factors are related to reduced involvement in work and subsequent career
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32 stagnation.
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38 1) Poor working condition with poor child support
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42 1-1) long working hours and subsequent occupational health hazard
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45 Medical workforce shortages result in both men and women having to work long hours
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47 and having to agree to frequent night shifts. In this study (excluding those who were
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49 unemployed), the median weekly working hour was 70 hours with interquartile ranges from
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51 50-80 hours among the 152 women in their 20's, which far exceeds the 40 hours per week,
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4 which is the maximum working hours regulated by Japanese Labor Standards Act (Article
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7 32). Respondents pointed out that such long working hours resulted in occupational health
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10 hazards.

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13 *“As the result of my hard work, including night shifts even during pregnancy, I*
14
15 *experienced a near miscarriage and had no choice but to resign.”* (part-time, 46
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19 y/o, married)

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24
25 *“When I experienced a near miscarriage with my second child, I had to work*
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28 *long hours. People at my workplace did not adjust my shift schedule.”*
29
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31 (anonymous)

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38 *“I have been suffering from depression for 5 years due to overwork.”* (part-time,
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41 42 y/o, married)

42 43 44 45 46 1-2) Lack of child-care facilities at work

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49 Many of our respondents claimed that the number of child-care facilities, including those
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53 that care for a sick child, were inadequate in the workplace. Two respondents suggested that
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4 increased availability of child-care facilities may increase the participation of women in the
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7 workforce.

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13 *“If my workplace had provided me with a child-care facility, including one that*
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15 *would care for a sick child, I could have afforded to work full-time when my*
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17 *children were little.”* (full-time, 69 y/o, divorced)

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23 *“Whenever my children have a fever, I am always called by the childcare*
24
25 *facility to pick up my kid. I wish that my workplace had a child-care facility for*
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27 *sick children.”* (full-time, 50 y/o, married)

2) Low levels of professional pursuit

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33 Two single women and an older female doctor who had a pioneering spirit, as they
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35 continued to work while raising children suggested that some women tend to be too passive
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42 in their career development and leave the workplace too easily.

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48 *“Women doctors from younger generations do not work very hard and do not*
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50 *pursue careers. I have had a very hard time balancing my work and child*
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52 *rearing. I never used my children as an excuse for my work but worked as much*
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4 *as or even harder than my male peers did.”* (full-time, 56 y/o, divorced)
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10 *“Women physicians with children sometimes claim that their workloads should*
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12 *be reduced because they have family responsibilities. I do not think it is fair.*

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16 *Once you became a doctor, you should fulfill your responsibility to serve*
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19 *patients.”* (full-time, 45 y/o, single)
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25 *“I do not know why some women physicians become pregnant very easily soon*
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28 *after they belong to a clinical department at hospitals where they are expected*
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31 *to work very hard.”* (full-time, 36 y/o, single)
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37 Here are examples of women who seemed to have low motivation for a professional career
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39 and sadly some who have attitudes in stark contrast to the ones above. Some women
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41 appeared to have low confidence in balancing physician’s job and personal life, resulting in
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47 low levels of professional pursuit.
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53 *“It is very difficult to seek promotion while fulfilling family responsibilities. My*
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4 *friends and I think it is a good idea to catch a man physician who will be a*
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7 *good candidate for a professorship and to enjoy life overseas while he studies*
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10 *abroad.” (full-time, 49 y/o, married)*

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16 *“Because my husband will open a private clinic in the future, I will help to run*
17
18 *a clinic. To be honest, my career is not important.” (part-time, 43 y/o, married)*

25 3) Lack of understanding in the workplace and harassment

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27
28 The respondents identified two aspects of a lack of workplace support: 3-1) a lack of
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30 understandings from both male and female colleagues, and 3-2) harassment.

37 3-1) Lack of understanding from men and women physicians

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40 A lack of understanding at the workplace from men and some women was associated with
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42 fears about the extra work incurred when women took long periods of leave due to life
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44 events.
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53 *“It is unfair that only women physicians who have children are allowed to take such a*
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4 *long absence from work.” (part-time, 50 y/o, married)*
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10 *“Male doctors at my workplace do not want to help female colleagues who insist that they*
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12 *cannot afford to work because of family responsibilities.” (full-time, 35 y/o, single)*
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19 *“Because there are few OBs & GYNs specialists at my university hospital, the workload of*
20
21 *each medic is tremendously heavy. So, I just can't say, 'I want to take any long leave*
22
23 *because of women's life events.'* (part-time, 41 y/o, married)
24
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28 29 30 31 3-2) Harassment 32

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34 The harassment reported here included unwanted and annoying actions from one party or
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36 a group, including threats and demands and appeared to be caused by offenders' fears that
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38 they would have to perform additional work as a result of women taking long periods of
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44 leave.
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47 *“I was laid off by my boss when I told him that I claimed the right to take*
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49 *parental leave. My boss said, 'Your taking maternal leave will add an*
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51 *additional work burden to others. I prefer to give your salaried position to*
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others.” (work schedule unknown, 39 y/o, married)

“I resigned from full-time work because of harassment from male doctors. Even though people at my workplace knew that I had children, I was forced to work and take night shifts as much as my male peers did.” (full-time, 56 y/o, divorced)

4) Stereotypical gender roles

It was clear that some women accepted that the caring role was theirs and theirs alone and had little or no expectation of sharing it with their partners or others.

4-1) Gender-related role expectations from others

“Women have to take care of not only children but also the elderly.” (full-time, 43 y/o, divorced)

“Child rearing is women's social responsibility.” (full-time, 48 y/o, single)

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7 *“The reason I am unemployed is not a matter of my career but involves the need*
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10 *to provide support for my husband until he becomes a professor. It is not*
11
12 *because of biological sex but because of gender roles; it is very hard for female*
13 *doctors to work as much as their male peers do.”* (unemployed, 45 y/o,
14
15
16
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19 married)

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24
25 4-2) Desire to rear their own children themselves

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28 This study showed that gender role expectation from others strongly prevailed, even among
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30
31 females doctors, but also some women had a strong desire to play the gender role (i.e., to
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33
34 raise her own children by themselves) put their children before their careers.
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41 *“If had I tried, I could have balanced work and parenting. But I had a strong*
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43 *desire to raise my children by myself as much as possible; I chose part-time*
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47 *practice.”* (part-time, 50 y/o, married)
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53 *“For my patients, they had many other doctors to choose from. but for my*
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children, I am their only mother.” (full-time, 64 y/o, married)

4-3) Gender-based discrimination

Several respondents experienced gender-based discrimination that appeared to influence their subsequent decisions about work. Some respondents reported very negative comments from male colleagues who clearly indicated that women doctors were not wanted.

“When I became a member of a clinical department at a university hospital, I was told, ‘We do not need women. We won’t teach women how to operate on patients.’ I was very hurt and felt very sad. After it all, I gave up the struggle and chose another career path. I have no regrets, but sometimes I think that if I had been born 20 years later, I would have been a different type of physician.”

(full-time, 51 y/o, divorced)

“When I was working at a university hospital, I saw that when a young woman physician expressed her opinion at a clinical conference, a senior male doctor said to her, ‘Women and children must shut up.’” (President of a company, 48

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4 y/o, single)
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13 5) Switch from full-time to part-time labor and consequent career stagnation
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19 Our respondents provided examples from their career that indicated that after a certain
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22 point there was no further professional advancement.
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28 *“I did not know why so many talented women physicians resigned from*
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31 *university hospitals when they became pregnant until I was in the same place.*
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34 *Because there are a very limited numbers of salaried positions at university*
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36
37 *hospitals, doctors who can afford to work on a long-term basis are better*
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39
40 *candidates than are women who have children.” (part-time, 39 y/o, married)*
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46
47 *“Women doctors do not take parental leave because of the limited number of*
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49
50 *co-workers. They have no choice but to quit a job or become part-timers.”*
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53 (full-time, 46 y/o, single)
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7 Once women doctors shift from full-time to part-time work, career development becomes
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9
10 very difficult because full-time practice is one of the requirements for specialist status.
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16 *“Because of my part-time practice, I could not apply to be a specialist, which*
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18 *would require me to work full-time.”* (part-time, 40 y/o, married)
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25 After marriage, female doctors’ work schedule and their place of residence both depend
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27 substantially on their husbands. Under such a circumstance, women had no choice but to
28
29 switch from full-time to part-time labor which lead to fewer professional opportunities
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31
32 resulting in career stagnation.
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41 *“My four children and I moved to Hiroshima and then to Kobe (which are 700*
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43 *and 500 km west from Tokyo, respectively) from Tokyo to follow my husband’s*
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45 *transfer.”* (full-time, 50 y/o, married)
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53 *“I went to the US with my husband because he studied abroad. I had a baby in*
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4 *the US and took care of the baby there (meaning that she was absent from*
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7 *professional work during the time period).” (full-time, 47 y/o, married)*
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13 *“‘Going out’ was very difficult for me, so I could not attend seminars or annual*
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15
16 *meetings to meet the specialist requirements. Now, I am not entitled to hold a*
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18
19 *specialist position. I hope the medical societies of the clinical departments in*
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21
22 *Japan change their specialist requirements [so that it does not have to be]*
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24
25 *based on full-time practice.” (full-time, 49 y/o, married, four children)*
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31 **Discussion**

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34 The findings from this study demonstrated that two factors: poor working condition with
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37 poor child support, and stereotypical views on gender roles contributed to a reduction of
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40 female doctors in the Japanese workplace and propelled women to switch from full-time to
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42
43 part-time labor. It was also found that poor working conditions influenced low aspirations
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45
46 of future career attainment and long working hours resulted in pregnant women being at
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48
49 risk of miscarriage or becoming psychologically depressed. We will discuss our results in
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51
52 the context of the extant literature.
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4 Poor working condition represented by long working hours in this study is embedded in
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6
7 a chronic, nationwide medical workforce shortage that Japan has faced over the past three
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9
10 decades.² In our sample, the weekly working hours among women in their 20's was 70
11
12
13 hours. This is similar to the findings from a survey of 1,036 doctors conducted by the
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15
16 Japanese Medical Labour Association¹³: physicians worked 10 hrs per day on average and
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18
19 approximately one-third worked more than 80 hours per week, and one-fourth worked a
20
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22 night shift and then worked continuously the following day.¹³ The present study highlighted
23
24
25 that some women experienced near miscarriages or depression due to a heavy workload.
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28 Although an increasing body of evidence indicates that long working hours or frequent
29
30
31 nights on call increase the risk of adverse pregnancy outcomes,^{14, 15} The current Japanese
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34 Labour Standard Act¹⁶ allows a woman to take prenatal leave 6 weeks before childbirth,
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36
37 but only if requested. In the clinical workplace, taking long term leave immediately impacts
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40 on others, who then need to cover this additional work. This means, there is no temporary
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43 or alternative staff to compensate for the deficit in the medical workforce. This may explain
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46 the lack of support and understanding from colleagues when women become pregnant and
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48
49 may be one of the main reasons women leave work completely rather than take maternity
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51
52 leave.⁴
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4 Even after women have given birth, new barriers are presented to returning to work.
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7 Recent statistics have shown a significant shortage of child-care centers in Japanese society
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10 as a whole, having approximately 50,000 children on waiting lists to enter a nursery.¹⁷ The
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12
13 lack of childcare is perpetuating the medical workforce shortage. The long working week
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16 combined with insufficient childcare during working hours seems to have negatively
17
18
19 influenced the professional motivation to continue to work as a female doctor. Indeed we
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21
22 found that some women in our sample stated that it is very difficult to pursue a professional
23
24
25 career while maintaining family responsibilities. In addition, our previous study based on a
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27
28 national survey of residents, we found that women were also less confident about their
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30
31 clinical competence than were their male peers.¹⁸ The finding of less confidence among
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33
34 women is often reported in academic medicine.¹⁹ The findings of our study may be
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36
37 explained by the nature of women in medicine that under such stressful circumstances (i.e.,
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39
40 a male dominated workplace, where male doctors are not supportive of female colleagues),
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42
43 women tend to be less confident.²⁰
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47 We also found that some women in the middle-older age groups were critical of younger
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49
50 women who seemed to have lower aspirations for future career development than they had
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52
53 had. This may be explained by the generation gap between women who had worked before
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4 and after the Equal Employment Opportunity Law came in.²¹ Before the introduction of the
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6
7 Act, it must have been even more challenging so that the older women with a pioneering
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10 spirit were less encouraging or supportive towards younger women who currently face
11
12
13 work life balance difficulties. In order to redefine gender roles and move away from older
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15
16 forms of gender stereotyping, male doctors in particular, should be encouraged to share
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18
19 roles both at work and at home. Participation in child rearing, household chores, and even
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21
22 parental leaves, help men understand the major challenges faced by women at work.
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25 Increased understanding by male physicians may also lead to a needed gender balance of
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27
28 board members of Japanese medical societies and to benefits of having a female
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30
31 perspective in a male dominated medical career.²²

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34 Our previous study showed that unmarried female doctors spent more time on household
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37 chores compared to married male doctors with children,²³ indicating that the gender-based
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40 division of household labor is prevalent in Japan. In this study, some women expressed
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43 their desire to raise their children on their own. The importance of choice must be respected,
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46 but at the same time the women who choose to work need to be support to do so, and
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48
49 helped to reduce the medical shortage. The current poor working conditions for women
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51
52 with caring responsibilities must be urgently improved. In addition, to support female
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3 careers, a system needs to be established which enables part-time doctors to hold a
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6 specialist license. Currently this is only issued to doctors working in full-time practice.
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10 The medical schools should raise these issues with all medical students and discuss how
11
12 they can combine medicine with future caring roles, as well as being supportive of
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14
15 colleagues who have caring roles.
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19 Some respondents in this study had experienced gender-based discrimination. Such
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21
22 gender-related harassment seemed to influence perception of their value at work, resulting
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24
25 in some women deciding to leave rather than challenge the strong negative attitudes they
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27
28 encountered in the workplace. In this study we found that women who perceived
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30
31 gender-based obstacles related to work opportunities or promotion were more likely to have
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34 moved to part-time rather than full-time work. The lower rate of full-time working practice
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37 among females compared to their male counterparts was considered as an obstacle to the
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40 utilization of female physicians in the medical work force. This means that gender-based
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43 discrimination will probably remain a barrier¹⁵ unless part-time working is given equal
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46 status as it is in other countries.²⁴
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53 *Limitations*
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4 This study has several limitations that need to be acknowledged. First, all of our
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6
7 respondents graduated from private medical schools. Thus, their views may not be
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9
10 generalizable to those educated in national, municipal and other private medical schools not
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13 included in the survey. Second, those who have felt uncomfortable with gender issues or
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16 with expressing their true concerns may not have participated in this study or may have
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19 declined to respond. Third, our analyses were based on textual analyses using the KJ
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21
22 method, which may not have thematically saturated data. Fourth, our survey method did not
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24
25 permit probing for more information as well as observation of nonverbal cues such as facial
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28 expressions or body language. Nevertheless, our sample was relatively large, and we
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30
31 therefore believe that we were able to identify the important themes.

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33
34 The long working hours of doctors and the lack of childcare works against supporting
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36
37 Japanese female doctors returning to work following childbirth. The current system which
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39
40 does not support part-time training or working at specialist level also needs challenging.
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43 Unfortunately our data has exposed negative attitudes towards female doctors from male
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45
46 colleagues, part of the problem is a system that does not provide sufficient cover for
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49 maternity leave, resulting in other staff taking on heavy workloads and directing negative
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51
52 comments at the pregnant females rather than at a system that is in need of modernisation.
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4 Finally, the roles of males and females in Japan, need modernisation, reflecting the benefits
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7 of sharing work roles and parental roles, and supporting women to pursues a career that will
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10 benefit both them and society.
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13

14 15 16 **Acknowledgement** 17

18
19 We would like to thank the alumni board members of 13 medical schools for their
20
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23
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32
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35
36
37 dataset.
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40 41 **Contributorship statement** 42

43
44 KN conceived study design and carried out survey. KN and YY performed qualitative
45
46
47 analyses. KN drafted manuscript which were edited by LG, and JI. MT and SH contributed
48
49
50 to the project management and revision of the manuscript. All authors read and approved
51
52
53 the final manuscript.
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Competing interests

None of the authors have any financial conflicts of interest.

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Data sharing

All the data collected as part of this study are available to interested researchers through ethical approval from Ethics Committee. Please contact KN (kyoko@med.teikyo-u.ac.jp) if you are interested in accessing the data.

Reference

1. World Economic Forum. *The global gender gap report 2013*.
http://www3.weforum.org/docs/WEF_GenderGap_Report_2013.pdf
2. OECD Health data. *Statistics and Indicators for 30 OECD countries 2010*.
U.S. Medical School Applicants and Students. Association of American Medical Colleges.
(1982-1983 to 2009-2010).
<https://www.aamc.org/download/153708/data/charts1982to2012.pdf>.
3. Ministry of Health, Labour, and Welfare. *Surveys of Physicians, Dentists, and Pharmacists 2010*. <http://www.mhlw.go.jp/english/database/db-hss/spdp.html>
4. Izumi M, Nomura K, Higaki Y, *et al*. Gender role stereotype and poor working condition pose obstacles for female doctors to stay in full-time employment: alumnae survey from two private medical schools in Japan. *Tohoku J Exp Med* 2013;229:233-7.
5. Izumi M, Higaki Y. Life-time resignation rate was 73% among women physicians. *Medical Education* (Japan).2008;39(Suppl):15-6.
6. Ministry of Internal Affairs and Communications, Statistics Bureau
Director-General for Policy Planning & Statistical Research and Training Institute. *Labour Force Survey*, 2011.

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2
3
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6
7
8
9
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41
42
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44
45
46
47
48
49
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51
52
53
54
55
56
57
58
59
60
7. The Cabinet Office, Government of Japan. *A public opinion Survey*.
<http://www8.cao.go.jp/survey/h24/h24-danjo/zh/z14.html>.
8. Yasukawa K, Nomura K. The Perception and Experience of Gender-Based Discrimination Related to Professional Advancement among Japanese Physicians. *Tohoku J Exp Med* 2014;232:35-42.
9. Nomura K, Gohchi K. Impact of gender-based career obstacles on the working status of women physicians in Japan. *Soc Sci Med* 2012;75:1612-6.
10. Charmaz K. *Constructing Grounded Theory: A Practical Guide Through Qualitative Analysis*. London: Sage;2006.
11. Illing JC1, Morrow GM, Rothwell nee Kergon CR, *et al* .Perceptions of UK medical graduates' preparedness for practice: a multi-centre qualitative study reflecting the importance of learning on the job. *BMC Med Educ* 2013;28:13-34.
12. Kawakita Jiro. *The way of thinking for creative development*. Tokyo: chuukousinnsyo;1967.
13. Japanese Medical Labour Association. *A survey of physician's work* (In Japanese). 2007. http://www.irouren.or.jp/jp/html/menu6/pdf/070219_ishino_rodjittai_tyousa.pdf
14. Bonzini M, Palmer KT, Coggon D, *et al* . Shift work and pregnancy outcomes: a

1
2
3 systematic review with meta-analysis of currently available epidemiological studies. *BJOG*

4
5
6 2011;118:1429-37.

7
8
9
10 15. Bonzini M, Coggon D, Palmer KT. Risk of prematurity, low birthweight and
11 pre-eclampsia in relation to working hours and physical activities: a systematic review.

12
13
14
15
16 *Occup Environ Med* 2007;64:228-43.

17
18
19 16. Article 64-3 Limitations on Dangerous and Injurious Work for Expectant and
20 Nursing Mothers, *Labour Standards Act*, Act No.49 of Apr 7,1947

21
22
23 17. The number of children who are in the waiting lists for child-care facilities .

24
25
26
27
28 Ministry of Health Labour and Welfare,

29
30
31 <http://www.mhlw.go.jp/stf/houdou/2r98520000022mcp.html>

32
33
34 18. Nomura K, Yano E, Fukui T. Gender differences in clinical confidence: a
35 nationwide survey of resident physicians in Japan. *Acad Med* 2010;85:647-53.

36
37
38 19. Blanch DC, Hall JA, Roter DL, *et al*. Medical student gender and issues of
39 confidence. *Patient Educ Couns*. 2008;72:374-81.

40
41
42
43
44 20. Kilminster S, Downes J, Gough B, *et al*. Women in medicine--is there a problem? A
45 literature review of the changing gender composition, structures and occupational cultures
46 in medicine. *Med Educ* 2007;41:39-49.

- 1
2
3
4 21. Act on Securing, Etc. of Equal Opportunity and Treatment between Men and
5
6 Women in Employment, Act No. 113 of Jul 1, 1972.
7
8
9
10 22. Tomizawa Y. Women in surgery: little change in gender equality in Japanese
11
12 medical societies over the past 3 years. *Surg Today* 2013;43:1202-05.
13
14
15
16 23. Yasukawa K, Nomura K. The division of labour by sex among Japanese physicians.
17
18 *Medical Education* (Japan) 2012;43:315-9.
19
20
21
22
23
24
25 24. Harrison RA, Gregg JL. A time for change: an exploration of attitudes toward
26
27 part-time work in academia among women internists and their division chiefs. *Acad Med*
28
29
30
31 2009; 84:80-6.
32
33
34
35
36
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The difficulty of professional continuation among female doctors in Japan: A qualitative study of alumnae of 13 medical schools in Japan

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Original Research**The difficulty of professional continuation among female doctors in Japan: A qualitative study of alumnae of 13 medical schools in Japan**

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28 stereotyping gender role; female doctors.
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4 Abstract (290)
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7 **Objectives:** To investigate the difficulties Japanese female doctors face in continuing
8
9 professional practice.
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12 **Design:** A qualitative study by using the Kawakita Jiro method.
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16 **Setting:** A survey of 13 private Japanese medical school alumni associations conducted in
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18 2011.
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22 **Participants:** 359 female doctors
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25 **Primary outcome measures:** Barriers of balancing work and gender role.
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28 **Results:** The female doctors reported that professional practice was a struggle with long
29
30 working hours due to a current shortage of doctors in Japan. There was also a severe
31
32 shortage of child-care facilities in the workplace. Some women appeared to have low
33
34 confidence in balancing the physician's job and personal life, resulting in low levels of
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36 professional pursuit. There appeared to be two types of stereotypical gender roles including
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38 one expected from society like "child rearing is a women's job", and the other perceived by
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40 the women themselves, that some women had a very strong desire to raise their own
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42 children. Male and some female doctors who were single or older were perceived to be less
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44 enthusiastic about supporting women who worked while raising children because the
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4 coworkers feared that they would have to perform additional work as a result of the women
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7 taking long periods of leave.
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10 **Conclusions:** Important factors identified in promoting the continuation of professional
11
12 practice among female doctors in Japan was the need to improve working conditions,
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14 including long working hours and a shortage of nursery places, and to introduce educational
15
16 interventions to clarify professional responsibilities and redefine the gender division of
17
18 labour for both male and female doctors. In addition, we identified a need to modernize the
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20 current employment practices by introducing temporary posts to cover maternity leave and
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22 introduce flexible working during specialist training thus supporting and encouraging more
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24 women to continue their medical careers.
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Article Summary

- A qualitative study based on 359 female doctors revealed that barriers of balancing work and gender role were mainly poor working conditions including long working hours due to a physician shortage and nursery shortage, and stereotypical gender role.
- There appeared to be two types of stereotypical gender roles including one expected from society like “child rearing is a women’s job”, and the other perceived by the women themselves, that some had a very strong desire to raise their own children.
- Male and some female doctors who were single or older were perceived to be less enthusiastic about supporting women who worked while raising children because the coworkers feared that they would have to perform additional work as a result of the women taking long periods of leave.
- The limitation of this study includes textual analyses using the KJ method, which may not have thematically saturated data.

Introduction

According to the Global Gender Gap Report 2013, Japan was ranked 105th out of 135 countries on gender equality¹, and on female participation in the labour force and political participations (i.e., percentage of women in parliament, ministerial positions) and have the lowest percentage of females in the workforce among the Organisation for Economic Co-operation and Development (OECD) countries.² The number of female doctors in Japan today are comparable with where the US was over twenty years ago, with only 18.9% (55,897) of all physicians³ being female. Given the critical shortage of doctors in Japan, it is worth considering why there are so few female doctors practicing and what can be done to increase this number.

Previous research has shown that female doctors in Japan work fewer hours, retire earlier, and are more likely to be professionally inactive compared to their male counterparts.⁴ A survey of 711 Japanese female doctors revealed that 55% had resigned from full-time positions at least once, and only 30% of these women returned to full-time employment.⁵ It is known that women in Japan often stop working in their 30s after having children and then return to the workforce after they have finished raising their children. This work pattern, which has been described as an “M-shaped curve” representing rates of

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3 participation in the labor force by age, is characterized by peaks in the early 20s and late
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6 40s combined with a trough in the early 30s.⁶
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10 This pattern has interestingly not been observed in any other country except Japan and
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12 Korea. Indeed, such low participation among the younger female generation may not be
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14 fully explained by child-rearing. First, gender-role stereotype is embedded into the
15
16 Japanese cultural systems, beliefs, and behaviors; meaning that men and women tend to
17
18 follow their specific gender roles and that women believe they should stay at home to take
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20 care of family responsibilities while men should go out to work. According to a public
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22 opinion survey in 2013, conducted by the Japanese government,⁷ 50 % of respondents in
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24 their 20's agreed with the stereotyping gender role while 46.6% disagreed and the rest
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26 answered that they did not know. Second, in our previous study based on 1,684 female
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28 doctors, we demonstrated that more women than men significantly experienced gender
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30 discrimination related to professional advancement,⁸ and doctors with the strongest
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32 perception of gender-based career obstacles were more likely to work part-time rather than
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34 full-time.⁹
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49 Hence we attempted to explore the factors that make it difficult for female doctors to
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51 balance professional development with gender role responsibilities using a qualitative
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3 approach.
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9 10 **Methods**

11 12 *Subjects*

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15 This cross-sectional study was based on a survey of alumnae who had previously trained
16 at one of 13 private medical schools. The study was conducted between June 2009 and May
17 2011. Japan has 80 medical schools, 29 of which are private. The present study was jointly
18 sponsored by the Council of Private Medical School Alumni Associations, the Ministry of
19 Education, Science, Sports, and Culture, Grand in Scientific Research and the Pfizer Health
20 Research Foundation and targeted at female doctors.
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34 The aim was to identify the challenges of having a good work-life balance. All of the 18
35 schools in the eastern region of Japan were targeted, and 13 agreed to participate in the
36 study. In total there were 9,544 female alumnae registered in the 13 alumni associations.
37
38 We sent an invitation letter to these women via email. The exact response rate is difficult to
39 determine as many of the emails were no longer used, however, 2,029 alumnae responded
40 with written informed consent to take part in the study. Of those that agreed to take part,
41 1,684 answered a self-administered questionnaire (response rate to the informed consent:
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3 83%).
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6 We included a single open-ended question soliciting participants' thoughts about the
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8 challenges of balancing professional work development with gender role responsibilities.
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10 The question had no word or page count limit. The questionnaire also included basic
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12 demographics, marital status, numbers of children, work status (i.e.,
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14 full-time/part-time/unemployed), worksite (university hospital/hospital/clinics/others) and
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16 questions about any experience of gender inequality in career opportunities and questions
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18 about any perception of gender-based obstacles.
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28 The study protocol was approved by the Institutional Review Board of Teikyo University
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30 School of Medicine (No. 08-107).
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37 *Theoretical perspective* 38

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40 Our study draws on a constructivist perspective, recognizing that this study listens to the
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42 social constructions and meaning making of the study participants and as researchers we
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44 bring our own interpretation reflecting that some of us are trainees and others are senior
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48 clinicians, male and female and living within the same culture as the study participants and
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51 others are non-clinicians, with a gender mix, living outside Japan in a western culture.¹⁰ We
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3 recognize that we are involved in the process of making new social constructions that result
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6 from the perspective of both the researcher and research object to form new constructions.¹¹
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10 11 12 *Kawakita Jiro (KJ) Method* 13

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15 The responses to the open-ended question were analyzed qualitatively using the Kawakita
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17 Jiro (KJ) method,¹² which was developed by Jiro Kawakita (a Japanese anthropologist). It
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19 is also called an affinity diagram that helps to synthesize large amounts of data by finding
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21 relationships between ideas and is suited to a constructivist perspective.
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28 Six researchers including two coauthors (KN and YK) and two male medical students with
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30 different ages, marital status, and employment status analyzed the data. Firstly, we all
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32 initially reviewed respondents' comments as a working group and divided the comments
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34 into 1,322 fragments, each of which had only a single meaning (e.g., miscarriage following
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36 long working hours, depression following over work); these were recorded individually on
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38 cards. Second, we spread the cards out on a table and grouped them according to the
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40 similarity of the comments they presented or the context in which they appeared in the
41
42 initial transcript (e.g., poor working condition). Third, we discussed the shared meaning of
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44 each of the sorted groups and wrote the main theme description for each group on a blank
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3 card and placed this at the top of the group. Following this, we grouped the themes until we
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5
6 had reached the broadest, but still a meaningful, category. Forth, we drew lines connecting
7
8
9 the themes using an interactive process of discussion and consensus. If anyone disagreed,
10
11
12 we negotiated around a provisional domain of categories. This process continued until all
13
14
15 the data was classified under one of the categories. Every process was performed together
16
17
18 by the six researchers. The quotes given are reproduced exactly as written by our
19
20
21 participants except where indicated as the authors' clarification in square brackets.
22
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27

28 **Results**

29 *Participant characteristics*

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31
32 Of the 1,684 participants who returned questionnaires, this analysis focused on the 359
33
34 (21%) who provided answers to the open-ended question about continuing to work and deal
35
36 with the challenges of developing their careers; 78% of this group were married, 91% were
37
38 working as clinical physicians at the time of the study, 60% worked full-time and 35%
39
40 worked part-time, and 264 (74%) had children. The median age (inter-quartile range) was
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Overview of qualitative analysis

The KJ method yielded 5 domains

- 1) Poor working condition with poor child support (184 cards)
- 2) Low levels of professional pursuit (96 cards)
- 3) Lack of understanding in the workplace and harassment (132 cards)
- 4) Stereotypical gender roles (255 cards)
- 5) Switch from full-time to part-time labor and consequent career stagnation (157 cards)

Below we describe the factors that these female doctors identified as barriers to their professional development while also having stereotypical gender role responsibilities and discuss how these factors are related to reduced involvement in work and subsequent career stagnation.

1) Poor working condition with poor child support

1-1) long working hours and subsequent occupational health hazard

Medical workforce shortages result in both men and women having to work long hours and having to agree to frequent night shifts. In this study (excluding those who were unemployed), the median weekly working hour was 70 hours with interquartile ranges from

1
2
3 50-80 hours among the 152 women in their 20's, which far exceeds the 40 hours per week,
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5
6 which is the maximum working hours regulated by Japanese Labor Standards Act (Article
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8
9 32). Respondents pointed out that such long working hours resulted in occupational health
10
11 hazards.
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16 *“As the result of my hard work, including night shifts even during pregnancy, I*
17
18 *experienced a near miscarriage and had no choice but to resign.”* (part-time, 46
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20
21 y/o, married)
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27

28 *“When I experienced a near miscarriage with my second child, I had to work*
29
30 *long hours. People at my workplace did not adjust my shift schedule.”*
31
32
33
34 (anonymous)
35
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40 *“I have been suffering from depression for 5 years due to overwork.”* (part-time,
41
42
43 42 y/o, married)
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50 1-2) Lack of child-care facilities at work

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53 Many of our respondents claimed that the number of child-care facilities, including those
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4 that care for a sick child, were inadequate in the workplace. Two respondents suggested that
5
6
7 increased availability of child-care facilities may increase the participation of women in the
8
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10 workforce.

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15
16 *“If my workplace had provided me with a child-care facility, including one that*
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18
19 *would care for a sick child, I could have afforded to work full-time when my*
20
21
22 *children were little.”* (full-time, 69 y/o, divorced)

23
24
25
26 *“Whenever my children have a fever, I am always called by the childcare*
27
28
29 *facility to pick up my kid. I wish that my workplace had a child-care facility for*
30
31
32 *sick children.”* (full-time, 50 y/o, married)

33 34 35 2) Low levels of professional pursuit

36
37
38 Two single women and an older female doctor who had a pioneering spirit, as they
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40
41 continued to work while raising children suggested that some women tend to be too passive
42
43
44 in their career development and leave the workplace too easily.

45
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50
51 *“Female doctors from younger generations do not work very hard and do not*
52
53
54 *pursue careers. I have had a very hard time balancing my work and child*

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4 rearing. *I never used my children as an excuse for my work but worked as much*
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6
7 *as or even harder than my male peers did.*" (full-time, 56 y/o, divorced)
8
9

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11
12
13 *"Female doctors with children sometimes claim that their workloads should be*
14
15
16 *reduced because they have family responsibilities. I do not think it is fair. Once*
17
18
19 *you became a doctor, you should fulfill your responsibility to serve patients."*

20
21 (full-time, 45 y/o, single)
22
23
24
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26
27

28 *"I do not know why some female doctors become pregnant very easily soon*
29
30
31 *after they belong to a clinical department at hospitals where they are expected*
32
33
34 *to work very hard."* (full-time, 36 y/o, single)
35
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40 Here are examples of women who seemed to have low motivation for a professional career
41
42
43 and sadly some who have attitudes in stark contrast to the ones above. Some women
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45
46 appeared to have low confidence in balancing a physician's job and personal life, resulting
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48
49 in low levels of professional pursuit.
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“It is very difficult to seek promotion while fulfilling family responsibilities. My friends and I think it is a good idea to catch a man physician who will be a good candidate for a professorship and to enjoy life overseas while he studies abroad.” (full-time, 49 y/o, married)

“Because my husband will open a private clinic in the future, I will help to run a clinic. To be honest, my career is not important.” (part-time, 43 y/o, married)

3) Lack of understanding in the workplace and harassment

The respondents identified two aspects of a lack of workplace support: 3-1) a lack of understandings from both male and female colleagues, and 3-2) harassment.

3-1) Lack of understanding from men and female doctors

A lack of understanding at the workplace from men and some women was associated with fears about the extra work incurred when women took long periods of leave due to life events.

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4 *“It is unfair that only female doctors who have children are allowed to take such a long*
5
6 *absence from work.”* (part-time, 50 y/o, married)
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12
13 *“Male doctors at my workplace do not want to help female colleagues who insist that they*
14
15 *cannot afford to work because of family responsibilities.”* (full-time, 35 y/o, single)
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21
22 *“Because there are few OBs & GYNs specialists at my university hospital, the workload of*
23
24 *each medic is tremendously heavy. So, I just can't say, 'I want to take any long leave*
25
26 *because of women's life events.'* (part-time, 41 y/o, married)
27
28
29

30 31 32 33 34 3-2) Harassment

35
36
37 The harassment reported here included unwanted and annoying actions from one party or
38
39 a group, including threats and demands and appeared to be caused by offenders' fears that
40
41 they would have to perform additional work as a result of women taking long periods of
42
43
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45
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47 leave.

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49
50 *“I was laid off by my boss when I told him that I claimed the right to take*
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52 *parental leave. My boss said, 'Your taking maternal leave will add an*
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4 *additional work burden to others. I prefer to give your salaried position to*
5
6
7 *others.”* (work schedule unknown, 39 y/o, married)
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13 *“I resigned from full-time work because of harassment from male doctors. Even*
14
15
16 *though people at my workplace knew that I had children, I was forced to work*
17
18 *and take night shifts as much as my male peers did.”* (full-time, 56 y/o,
19
20
21
22 divorced)
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28 4) Stereotypical gender roles

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30
31 It was clear that some women accepted that the caring role was theirs and theirs alone and
32
33
34 had little or no expectation of sharing it with their partners or others.
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40 4-1) Gender-related role expectations from others

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47 *“Women have to take care of not only children but also the elderly.”* (full-time,
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50 43 y/o, divorced)
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“Child rearing is women's social responsibility.” (full-time, 48 y/o, single)

“The reason I am unemployed is not a matter of my career but involves the need to provide support for my husband until he becomes a professor. It is not because of biological sex but because of gender roles; it is very hard for female doctors to work as much as their male peers do.” (unemployed, 45 y/o, married)

4-2) Desire to rear their own children themselves

This study showed that gender role expectation from others strongly prevailed, even among females doctors, but also some women had a strong desire to play the gender role (i.e., to raise her own children by themselves) put their children before their careers.

“If had I tried, I could have balanced work and parenting. But I had a strong desire to raise my children by myself as much as possible; I chose part-time practice.” (part-time, 50 y/o, married)

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“For my patients, they had many other doctors to choose from. but for my children, I am their only mother.” (full-time, 64 y/o, married)

4-3) Gender-based discrimination

Several respondents experienced gender-based discrimination that appeared to influence their subsequent decisions about work. Some respondents reported very negative comments from male colleagues who clearly indicated that women doctors were not wanted.

“When I became a member of a clinical department at a university hospital, I was told, ‘We do not need women. We won’t teach women how to operate on patients.’ I was very hurt and felt very sad. After it all, I gave up the struggle and chose another career path. I have no regrets, but sometimes I think that if I had been born 20 years later, I would have been a different type of physician.”

(full-time, 51 y/o, divorced)

“When I was working at a university hospital, I saw that when a young female doctors expressed her opinion at a clinical conference, a senior male doctor

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4 said to her, 'Women and children must shut up.'" (President of a company, 48
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7 y/o, single)
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16 5) Switch from full-time to part-time labor and consequent career stagnation
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22 Our respondents provided examples from their career that indicated that after a certain
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24
25 point there was no further professional advancement.
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29

30
31 *"I did not know why so many talented female doctors resigned from university*
32
33 *hospitals when they became pregnant until I was in the same place. Because*
34
35 *there are a very limited numbers of salaried positions at university hospitals,*
36
37 *doctors who can afford to work on a long-term basis are better candidates than*
38
39 *are women who have children."* (part-time, 39 y/o, married)
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50 *"Female doctors do not take parental leave because of the limited number of*
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52 *co-workers. They have no choice but to quit a job or become part-timers."*
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4 (full-time, 46 y/o, single)
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10 Once female doctors shift from full-time to part-time work, career development becomes
11
12 very difficult because full-time practice is one of the requirements for specialist status.
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19 *“Because of my part-time practice, I could not apply to be a specialist, which*
20
21 *would require me to work full-time.”* (part-time, 40 y/o, married)
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28 After marriage, female doctors’ work schedule and their place of residence both depend
29
30 substantially on their husbands. Under such a circumstance, women had no choice but to
31
32 switch from full-time to part-time labor which lead to fewer professional opportunities
33
34
35 resulting in career stagnation.
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44 *“My four children and I moved to Hiroshima and then to Kobe [which are 700*
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46 *and 500 km west from Tokyo, respectively] from Tokyo to follow my husband’s*
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48 *transfer.”* (full-time, 50 y/o, married)
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4 “I went to the US with my husband because he studied abroad. I had a baby in
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7 the US and took care of the baby there (meaning that she was absent from
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10 professional work during the time period).” (full-time, 47 y/o, married)

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15
16 “‘Going out’ was very difficult for me, so I could not attend seminars or annual
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19 meetings to meet the specialist requirements. Now, I am not entitled to hold a
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21
22 specialist position. I hope the medical societies of the clinical departments in
23
24
25 Japan change their specialist requirements [so that it does not have to be based
26
27
28 on full-time practice.]” (full-time, 49 y/o, married, four children)

33 34 35 Discussion

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38 The findings from this study demonstrated that two factors: poor working condition with
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40
41 poor child support, and stereotypical views on gender roles contributed to a reduction of
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44 female doctors in the Japanese workplace and propelled women to switch from full-time to
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47 part-time labor. It was also found that poor working conditions influenced low aspirations
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49
50 of future career attainment and long working hours resulted in pregnant women being at
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52
53 risk of miscarriage or becoming psychologically depressed. We will discuss our results in
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3
4 the context of the extant literature.

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6
7 Poor working condition represented by long working hours in this study is embedded in
8
9
10 a chronic, nationwide medical workforce shortage that Japan has faced over the past three
11
12 decades.² Although the data was not shown, our study found that the weekly working hours
13
14 among women in their 20's was 70 hours. This is similar to the findings from a survey of
15
16 1,036 doctors conducted by the Japanese Medical Labour Association¹³: physicians worked
17
18 10 hrs per day on average and approximately one-third worked more than 80 hours per
19
20 week, and one-fourth worked a night shift and then worked continuously the following
21
22 day.¹³ The present study highlighted that some women specified that they had experienced
23
24 near miscarriages or depression due to a heavy workload. There is an increasing body of
25
26 evidence indicates that long working hours or frequent nights on call increase the risk of
27
28 adverse pregnancy outcomes,^{14, 15}. The current Japanese Labour Standard Act¹⁶ allows a
29
30 woman to take prenatal leave 6 weeks before childbirth, but only if requested. In the
31
32 clinical workplace, taking long term leave immediately impacts on others, who then need to
33
34 cover this additional work. This means, there are no temporary or alternative staff to
35
36 compensate for the deficit in the medical workforce. This may explain the lack of support
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38 and understanding from colleagues when women become pregnant and may be one of the
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4 main reasons women leave work completely rather than take maternity leave.⁴
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7 Even after women have given birth, new barriers are presented to returning to work.
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10 Recent statistics have shown a significant shortage of child-care centers in Japanese society
11
12 as a whole, having approximately 50,000 children on waiting lists to enter a nursery.¹⁷ The
13
14 lack of childcare is perpetuating the medical workforce shortage. The long working week
15
16 combined with insufficient childcare during working hours seems to have negatively
17
18 influenced the professional motivation to continue to work as a female doctor. Indeed we
19
20 found that some women in our sample stated that it is very difficult to pursue a professional
21
22 career while maintaining family responsibilities. In addition, our previous study based on a
23
24 national survey of residents, we found that women were also less confident about their
25
26 clinical competence than were their male peers.¹⁸ The finding of less confidence among
27
28 women is often reported in academic medicine.¹⁹ The findings of our study may be
29
30 explained by the nature of women in medicine that under such stressful circumstances (i.e.,
31
32 a male dominated workplace, where male doctors are not supportive of female colleagues),
33
34 women tend to be less confident.²⁰
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49 We also found that some women in the middle-older age groups were critical of younger
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51 women who seemed to have lower aspirations for future career development than they had
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4 had. This may be explained by the generation gap between women who had worked before
5
6 and after the Equal Employment Opportunity Law came in.²¹ Before the introduction of the
7
8 Act, it must have been even more challenging so that the older women with a pioneering
9
10 spirit were less encouraging or supportive towards younger women who currently face
11
12 work life balance difficulties. In order to redefine gender roles and move away from older
13
14 forms of gender stereotyping, male doctors in particular, should be encouraged to share
15
16 roles both at work and at home. Participation in child rearing, household chores, and even
17
18 parental leave, help men understand the major challenges faced by women at work.
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20

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22 Increased understanding by male physicians may also lead to a needed gender balance of
23
24 board members of Japanese medical societies and to seeing the benefits of having a female
25
26 perspective in a male dominated medical career.²²
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29 Our previous study showed that unmarried female doctors spent more time on household
30
31 chores compared to married male doctors with children,²³ indicating that the gender-based
32
33 division of household labor is prevalent in Japan. In this study, some women expressed
34
35 their desire to raise their children on their own. The importance of choice must be respected,
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37 but at the same time the women who choose to work need to be supported to do so, and
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39 helped to reduce the medical shortage. The current poor working conditions for women
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4 with caring responsibilities must be urgently improved. In addition, to support female
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7 careers, a system needs to be established which enables part-time doctors to hold a
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10 specialist license. Currently this is only issued to doctors working in full-time practice.
11

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13 The medical schools should raise these issues with all medical students and discuss how
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15 they can combine medicine with future caring roles, as well as being supportive of
16
17
18 colleagues who have caring roles.
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22 Some respondents in this study had experienced gender-based discrimination. Such
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24
25 gender-related harassment seemed to influence perception of their value at work, resulting
26
27
28 in some women deciding to leave rather than challenge the strong negative attitudes they
29
30
31 encountered in the workplace. In this study we found that women who perceived
32
33
34 gender-based obstacles related to work opportunities or promotion were more likely to have
35
36
37 moved to part-time rather than full-time work. Once dropped into part-time practice, the
38
39
40 likelihood of having an opportunity to build a career easily deteriorates. This is one of the
41
42
43 reasons why female physicians cannot pursue their career although they are legally offered
44
45
46 to take maternity leave. The lower rate of full-time working practice among females
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49 compared to their male counterparts was considered as an obstacle to the utilization of
50
51
52 female doctors in the medical work force. This means that gender-based discrimination will
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3 probably remain a barrier¹⁵ unless part-time working is given equal status as it is in other
4
5
6 countries.²⁴
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10 11 12 *Limitations*

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14
15 This study has several limitations that need to be acknowledged. First, all of our
16
17 respondents graduated from private medical schools. Thus, their views may not be
18
19 generalizable to those educated in national, municipal and other private medical schools not
20
21 included in the survey. Similarly, those who have felt uncomfortable with gender issues or
22
23 with expressing their true concerns may not have participated in this study or may have
24
25 declined to respond. Hence, the transferability of this study might be limited however, the
26
27 quotes cited in this study are very important in terms of whether they raise
28
29 thought-provoking issues that health-care systems should consider how to maximize
30
31 women's potential to increase the numbers of women in leadership positions. Second, our
32
33 analyses were based on textual analyses using the KJ method, which may not have
34
35 thematically saturated data. Third, our survey method did not permit probing for more
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37 information as well as observation of nonverbal cues such as facial expressions or body
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39 language. Nevertheless, our sample was relatively large, and we therefore believe that we
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3 were able to identify the important themes.
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6 The long working hours of doctors and the lack of childcare works against supporting
7
8 Japanese female doctors returning to work following childbirth. The current system which
9
10 does not support part-time training or working at specialist level also needs challenging.
11
12 Unfortunately our data has exposed negative attitudes towards female doctors from male
13
14 colleagues, part of the problem is a system that does not provide sufficient cover for
15
16 maternity leave in spite of maternity leave offered by laws, resulting in other staff taking on
17
18 heavy workloads and directing negative comments at the pregnant females rather than at a
19
20 system that is in need of modernisation. Finally, the roles of males and females in Japan,
21
22 need modernisation, reflecting the benefits of sharing work roles and parental roles, and
23
24 supporting women to pursues a career that will benefit both them and society.
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44
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50
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2
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4
5
6 for her assistance in collecting data, and Mr. Yu Nomura for his assistance in developing the
7
8
9
10 dataset.

11 12 13 **Contributorship statement**

14
15 KN conceived study design and carried out survey. KN and YY performed qualitative
16
17
18 analyses. KN drafted manuscript which were edited by LG, and JI. MT and SH contributed
19
20
21 to the project management and revision of the manuscript. All authors read and approved
22
23
24 the final manuscript.
25
26

27 28 **Competing interests**

29
30
31 None of the authors have any financial conflicts of interest.
32
33

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36
37 All authors have completed the ICMJE uniform disclosure form at
38
39
40 www.icmje.org/coi_disclosure.PTB (available on request from the corresponding author)
41
42
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44
45
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47
48
49 Health Research Foundation. However, these were not involved in study design and the
50
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52 collection, analysis, and interpretation of data and the writing of the article and the decision
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2
3 to submit it for publication. Authors had no financial relationships with any organisations
4
5
6 that might have an interest in the submitted work in the previous three years and no other
7
8
9 relationships or activities that could appear to have influenced the submitted work.
10
11

12 **Data sharing**

13
14
15 All the data collected as part of this study are available to interested researchers through
16
17
18 ethical approval from Ethics Committee. Please contact KN (kyoko@med.teikyo-u.ac.jp) if
19
20
21 you are interested in accessing the data.
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56
57
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Reference

1. World Economic Forum. *The global gender gap report 2013*.
http://www3.weforum.org/docs/WEF_GenderGap_Report_2013.pdf
2. OECD Health data. *Statistics and Indicators for 30 OECD countries 2010*.
U.S. Medical School Applicants and Students. Association of American Medical Colleges.
(1982-1983 to 2009-2010).
<https://www.aamc.org/download/153708/data/charts1982to2012.pdf>.
3. Ministry of Health, Labour, and Welfare. *Surveys of Physicians, Dentists, and Pharmacists 2010*. <http://www.mhlw.go.jp/english/database/db-hss/spdp.html>
4. Izumi M, Nomura K, Higaki Y, *et al*. Gender role stereotype and poor working condition pose obstacles for female doctors to stay in full-time employment: alumnae survey from two private medical schools in Japan. *Tohoku J Exp Med* 2013;229:233-7.
5. Izumi M, Higaki Y. Life-time resignation rate was 73% among female doctors. *Medical Education* (Japan).2008;39(Suppl):15-6.
6. Ministry of Internal Affairs and Communications, Statistics Bureau
Director-General for Policy Planning & Statistical Research and Training Institute. *Labour Force Survey*, 2011.

- 1
2
3
4 7. The Cabinet Office, Government of Japan. *A public opinion Survey*.
5
6 <http://survey.gov-online.go.jp/h24/h24-danjo/zh/z14.html>
7
8
9
10 8. Yasukawa K, Nomura K. The Perception and Experience of Gender-Based
11
12 Discrimination Related to Professional Advancement among Japanese Physicians.
13
14 *Tohoku J Exp Med* 2014;232:35-42.
15
16
17
18
19 9. Nomura K, Gohchi K. Impact of gender-based career obstacles on the working
20
21 status of women physicians in Japan. *Soc Sci Med* 2012;75:1612-6.
22
23
24
25 10. Charmaz K. *Constructing Grounded Theory: A Practical Guide Through*
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60
11. Illing, J (2013). Theoretical perspectives in medical education research. In *The Oxford Textbook of Medical Education*. Walsh, K Oxford University Press
12. Kawakita Jiro. *The way of thinking for creative development*. Tokyo: chuukousinnsyo;1967.
13. Japanese Medical Labour Association. *A survey of physician's work* (In Japanese). 2007.
14. Bonzini M, Palmer KT, Coggon D, *et al*. Shift work and pregnancy outcomes: a systematic review with meta-analysis of currently available epidemiological studies. *BJOG*

2011;118:1429-37.

15. Bonzini M, Coggon D, Palmer KT. Risk of prematurity, low birthweight and pre-eclampsia in relation to working hours and physical activities: a systematic review.

Occup Environ Med 2007;64:228-43.

16. Article 64-3 Limitations on Dangerous and Injurious Work for Expectant and Nursing Mothers, *Labour Standards Act*, Act No.49 of Apr 7,1947

17. The number of children who are in the waiting lists for child-care facilities .

Ministry of Health Labour and Welfare,

<http://www.mhlw.go.jp/stf/houdou/2r98520000022mcp.html>

18. Nomura K, Yano E, Fukui T. Gender differences in clinical confidence: a nationwide survey of resident physicians in Japan. *Acad Med* 2010;85:647-53.

19. Blanch DC, Hall JA, Roter DL, *et al*. Medical student gender and issues of confidence. *Patient Educ Couns*. 2008;72:374-81.

20. Kilminster S, Downes J, Gough B, *et al*. Women in medicine--is there a problem? A literature review of the changing gender composition, structures and occupational cultures in medicine. *Med Educ* 2007;41:39-49.

21. Act on Securing, Etc. of Equal Opportunity and Treatment between Men and

1
2
3
4 Women in Employment, Act No. 113 of Jul 1, 1972.

5
6
7 22. Tomizawa Y. Women in surgery: little change in gender equality in Japanese
8
9
10 medical societies over the past 3 years. *Surg Today* 2013;43:1202-05.

11
12
13 23. Yasukawa K, Nomura K. The division of labour by sex among Japanese physicians.
14
15
16 *Medical Education* (Japan) 2012;43:315-9.

17
18
19 24. Harrison RA, Gregg JL. A time for change: an exploration of attitudes toward
20
21
22 part-time work in academia among women internists and their division chiefs. *Acad Med*
23
24
25 2009; 84:80-6.
26
27
28
29
30
31
32
33
34
35
36
37
38
39
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