

- 1 **Management of Psoriasis in Women 18–45 Years of Age in**
- 2 **Australia and Japan: Insights from Patient and**
- 3 **Dermatologist Surveys**

# 1 **Supplementary Material**

## 2 **Supplementary Methods**

### 3 *Patient survey*

4 Patients were recruited from consumer panels by Hummingbird Insight (Sydney,  
5 Australia) to participate in a 20-minute online survey (37 questions in total, including  
6 screening questions), conducted from September–October 2018. The surveys were  
7 developed in English and delivered in the local language of each country. Translation  
8 of the questionnaire for Japanese patients was also conducted by Hummingbird  
9 Insight (Sydney, Australia).

10 The patient questionnaire was adapted from a previous global survey, reported by  
11 Tincani et al. 2018.<sup>1</sup> This global survey was designed to identify how women  
12 balanced family planning and treatment of their condition, including topics such as  
13 quality of information received from healthcare professionals (HCPs), pre-conception  
14 planning, and treatment decisions around pregnancy and breastfeeding. The full  
15 patient questionnaire was reported by Tanaka et al. 2023, and adapted for this study  
16 with only slight differences in wording to account for the different patient groups.<sup>2</sup>

### 17 *Dermatologist survey*

18 A panel of dermatologists were contacted and invited by IQVIA (Sydney, Australia  
19 and Tokyo, Japan, for the respective countries) to complete an online survey (11  
20 questions in total, including screening questions), conducted from October–  
21 December 2020. The surveys were developed in English and delivered in the local  
22 language of each country. Translation of the questionnaire for Japanese  
23 dermatologists was conducted by IQVIA (Tokyo, Japan).

1 The dermatologist questionnaire was also adapted from a previous global survey  
2 reported by Tincani et al. 2018.<sup>3</sup> This global survey was designed to assess  
3 dermatologists' comfort levels with prescribing TNFi for women aged 18–45 years,  
4 decisions around the use of a TNFi prior to, during, and after pregnancy, as well as  
5 concerns around adverse events associated with TNFi use during pregnancy. The full  
6 dermatologist questionnaire was reported by Tanaka et al. 2023, and adapted for  
7 this study with only slight differences in wording to account for the different HCPs.<sup>2</sup>

## 8 **References**

- 9 1. Tincani A, Taylor P, Fischer-Betz R, et al. FRI0693 Fears and misconceptions of  
10 women with chronic rheumatic diseases on their journey to motherhood. *Ann*  
11 *Rheum Dis* 2018;77:866.
- 12 2. Tanaka Y, Barrett C, Hirano Y, et al. Management of chronic rheumatic diseases  
13 in women 18–45 years of age in Asia Pacific: insights from patient and clinician  
14 surveys. *Rheumatol Int* 2023;43:721–33.
- 15 3. Tincani A, Taylor P, Fischer-Betz R, et al. FRI0692 Anti-TNF treatments for  
16 women with chronic inflammatory diseases: comparing attitudes and perceptions  
17 of physicians in Europe and the US. *Ann Rheum Dis* 2018;77:865.

1 *Patient questionnaire*

Question <sup>a</sup>	Response										
1. When were you diagnosed with your (insert diagnosis)? [single response]	<ul style="list-style-type: none"> <li>• Before your pregnancy</li> <li>• During your pregnancy</li> <li>• After your pregnancy</li> </ul>										
2. Did you ever use any medications for your (insert diagnosis)? [single response]	<ul style="list-style-type: none"> <li>• Yes</li> <li>• No</li> </ul>										
3. With which healthcare professional did you discuss at the different stages of your pregnancy? [multiple response]		Before (when you start planning) your pregnancy	At the start of your pregnancy	During your pregnancy	After your pregnancy	In none of these situations					
	Dermatologists										
	GP										
	OBGYN										
	Paediatrician										
Midwife											
3a. Before pregnancy, which one did you consider your most critical advisor? [single response, depending on answer in 3]	<ul style="list-style-type: none"> <li>• Dermatologists</li> <li>• GP</li> <li>• OBGYN</li> <li>• Paediatrician</li> <li>• Midwife</li> </ul>										
4. Prior to pregnancy, during your consultation with this healthcare professional, who brought up the subject of family planning? [single response, depending on answer in 3a]	<ul style="list-style-type: none"> <li>• Myself</li> <li>• Physician/Healthcare professional from question 3a above</li> <li>• My partner</li> <li>• I do not remember</li> </ul>										
5. Can you still remember when the topic of planning a pregnancy was discussed for the first time with a healthcare professional? [single response]	<ul style="list-style-type: none"> <li>• At the time of diagnosis</li> <li>• At the time of treatment initiation</li> <li>• At a regular visit</li> <li>• I do not remember</li> </ul>										
6. If you think back about this discussion, to what extent did you ... [select level]		1 not at all	2	3	4	5	6	7	8	9	10 com- pletely
	... feel like your questions and										

	concerns about pregnancy were addressed											
	...have the support of your healthcare professional on getting pregnant											
7. Did you have any concern that delayed your decision to become a mother for your most recent pregnancy? [single response]	<ul style="list-style-type: none"> <li>• Yes</li> <li>• No</li> </ul>											
8. Which (if any) of the following concerns delayed your decision to become a mother for your most recent pregnancy? [multiple response]	<ul style="list-style-type: none"> <li>• I was not emotionally ready to become a parent</li> <li>• My partner was not emotionally ready to become a parent</li> <li>• I was not financially able to support a child/go on maternity leave</li> <li>• My relationship with my partner was not in the right place to have a child</li> <li>• I was not physically healthy enough to conceive and carry a child to term</li> <li>• I might pass on a health issue to my child</li> <li>• My education/career was not in the right place to have a child</li> <li>• I thought I was too young to have a child</li> <li>• I thought I was too old to have a child</li> <li>• I did not have the support of my physician to become pregnant</li> <li>• I did not have access to the medical care needed to become pregnant and give birth</li> <li>• Other, please specify:</li> <li>• None of the above</li> </ul>											
9. Which of the following best describes the circumstances around your most recent pregnancy? [single response]	<ul style="list-style-type: none"> <li>• I was actively trying to get pregnant</li> <li>• I was open to seeing what happened (wasn't trying particularly hard one way or the other)</li> <li>• I was not thinking about this</li> <li>• I was actively trying to NOT get pregnant</li> </ul>											
10. How much time did it take you to become pregnant from the moment you started trying to conceive?	<ul style="list-style-type: none"> <li>• ___ months</li> <li>• I don't know</li> </ul>											
11. At the time you discovered you were pregnant, to what extent did you experience any of the following concerns? [single response]		Not at all concerning								Very concerning	Not applicable	
	That the pregnancy might end in miscarriage											

	That I was not physically healthy enough to be pregnant						
	That my disease activity would compromise the health of the baby						
	That I might pass on a health issue to my child						
	That there might be something wrong with the child						
	That pregnancy might make my disease worse						
	That I did not have access to the medical care needed to have a successful pregnancy and give birth						
	That the treatment I was on might harm the baby						
12. Prior to pregnancy, did you receive all the information you needed from your healthcare professional? Or was there any type of information you would have liked to receive and that you did not get? [multiple response]	<ul style="list-style-type: none"> <li>• I received all the information I needed (fixed position)</li> <li>• Impact of the disease activity on my health</li> <li>• Impact of my disease activity on my baby</li> <li>• Impact of the treatment on my baby</li> <li>• Impact of pregnancy on my disease</li> <li>• Other, please specify:</li> </ul>						
13. What treatment were you taking before your pregnancy? [multiple response]	<ul style="list-style-type: none"> <li>• Immunosuppressants (e.g., ciclosporine)</li> <li>• Topical products (e.g., calcipotriol, calcitriol, clobetasol, calcipetrol/betamethasone)</li> <li>• Tumour necrosis factor inhibitor (e.g., Enbrel [etanercept], Humira [adalimumab], Remicade [infliximab])</li> <li>• Other biologic (including Stelara [ustekinumab], Cosentyx [secukinumab], Taltz [ixekizumab])</li> <li>• Other oral (e.g., Otezla [apremilast])</li> <li>• I don't know</li> </ul>						
14. Before trying to conceive, did you and your treating physician create a treatment plan around what medications you would take and not take if you became pregnant? [single response]	<ul style="list-style-type: none"> <li>• Yes</li> <li>• No</li> </ul>						

15. Was there any discussion around your treatment plan between your treating physician and your obstetrician/gynaecologist? [single response]	<ul style="list-style-type: none"> <li>• Yes</li> <li>• No</li> </ul>					
16. Did you stop any of the following treatment and when? [single response]		Before (when you start planning) your pregnancy	At the start of your pregnancy	During your pregnancy	After your pregnancy	In none of these situations
17. You indicated you stopped your treatment. Whose idea was it to stop your treatment? [multiple response, based on Q3 and Q16 response]	<ul style="list-style-type: none"> <li>• Same list as question 13</li> </ul>					
18. What were the key reasons why your treatment was stopped during your most recent pregnancy? [multiple response, based on Q16]	<ul style="list-style-type: none"> <li>• My idea</li> <li>• My treating physician idea</li> <li>• My obstetrician/gynaecologist idea</li> <li>• My partner's idea</li> <li>• Other, please specify:</li> </ul>					
19. How would you rate the severity of your (insert diagnosis) during your pregnancy? [single response]	<ul style="list-style-type: none"> <li>• I/my physician [based on answer in Q17] was worried about the treatment harming the fetus</li> <li>• I/my physician [based on answer in Q17] could not find information if my treatment was compatible with pregnancy</li> <li>• My disease went into remission, so there was no need to treat</li> <li>• I/my physician [based on answer in Q17] believed disease would likely go into remission, so stopped treatment and waited to see if needed</li> <li>• I switched to a safer treatment/my physician switched me to a safer treatment [based on answer in Q17]</li> <li>• I/my physician [based on answer in Q17] worried about infection risk during labour</li> <li>• There was a possible contraindication with other medications</li> <li>• Physicians could not agree on the best plan</li> <li>• Other</li> </ul>					
20. Did your disease improve, worsen or stay the same during your pregnancy? [single response]	<ul style="list-style-type: none"> <li>• Very well controlled/in remission</li> <li>• Well controlled/in low disease activity</li> <li>• Not very well controlled/in medium disease activity</li> <li>• Uncontrolled/in high disease activity</li> </ul>					
	<ul style="list-style-type: none"> <li>• Improved a lot</li> <li>• Improved a little</li> <li>• Stayed the same</li> <li>• Worsened a little</li> </ul>					

	<ul style="list-style-type: none"> <li>• Worsened a lot</li> </ul>
21. After your baby was born, did your disease improve, worsen or stay the same? [single response]	<ul style="list-style-type: none"> <li>• Improved a lot</li> <li>• Improved a little</li> <li>• Stayed the same</li> <li>• Worsened a little</li> <li>• Worsened a lot</li> </ul>
22. How many months after your baby was born did it worsen?	<ul style="list-style-type: none"> <li>• ____ months after I gave birth</li> </ul>
23. You indicated that you stopped your treatment before or during pregnancy. Did you reinitiate after your pregnancy? If so, how effective was the treatment when reinitiated? [single response, based on Q16]	<ul style="list-style-type: none"> <li>• I did not reinitiate</li> <li>• I did reinitiate and it was more effective</li> <li>• I did reinitiate and it was less effective</li> <li>• I did reinitiate and it was as effective as before</li> <li>• I don't remember</li> </ul>
24. Did you breast-feed your baby? [single response]	<ul style="list-style-type: none"> <li>• Yes</li> <li>• No</li> </ul>
25. You indicated that you did not breast-feed your baby. Can you indicate what the reason you had for not doing so? [single response, based on Q24]	<ul style="list-style-type: none"> <li>• Needed to start treatment for my illness immediately and could not breastfeed while on treatment</li> <li>• Needed to go back to work</li> <li>• Did not want to breastfeed</li> <li>• Was physically unable to breastfeed</li> <li>• Baby did not latch</li> <li>• Doctor/healthcare professional recommended not to breastfeed</li> <li>• Other, please specify:</li> <li>• None of the above</li> </ul>
26. Did your treating physician talk to you about the possibilities of breastfeeding? [single response]	<ul style="list-style-type: none"> <li>• Yes, we talked about this for the first time before my pregnancy</li> <li>• Yes, we talked about this for the first time during my pregnancy</li> <li>• Yes, we talked about this for the first time right after delivery</li> <li>• No, this option was not discussed</li> </ul>
27. Which other healthcare professional(s) discussed the possibilities of breastfeeding with you? [multiple response]	<ul style="list-style-type: none"> <li>• Primary Care Physician/General Practitioner</li> <li>• Obstetrician or Gynaecologist</li> <li>• Paediatrician</li> <li>• Lactation Specialist</li> <li>• Midwife</li> <li>• Other, please specify:</li> <li>• I didn't consult a healthcare professional at this point</li> </ul>
28. Can you also indicate which of the healthcare professionals was the most important in	<ul style="list-style-type: none"> <li>• Primary Care Physician/General Practitioner</li> <li>• Dermatologist</li> <li>• Obstetrician or Gynaecologist</li> </ul>



influencing your decision whether or not to breastfeed? [single response, based on Q26 and Q27 response]	<ul style="list-style-type: none"> <li>• Paediatrician</li> <li>• Lactation Specialist</li> <li>• Midwife</li> <li>• Other, please specify:</li> </ul>							
29. To what extent did you and/or your healthcare professionals worry about the consequences of your treatment on your baby while breastfeeding? [multiple response, based on Q23 response]	1 not at all concerned							10 very concerned
	Myself							
	My gynaecologist or paediatrician or lactation specialist							
	Dermatologist							
30. Did you feel you had to make a choice between breastfeeding and treatment? [multiple response]	<ul style="list-style-type: none"> <li>• Yes, I had the feeling that I could not combine both breastfeeding and my treatment</li> <li>• No, I had the feeling that I could combine both breastfeeding and my treatment</li> </ul>							
31. How reliable do you feel the information from your healthcare professional(s) is on how to manage your disease during pregnancy? [single response per row]	1 Not at all reliable	2	3 Neither reliable, nor unreliable	4	5 Very reliable	Not applicable for me		
	Primary Care Physician/General Practitioner							
	Midwife							
	Dermatologist							
	Obstetrician or Gynaecologist							
	Paediatrician							
	Other; please specify [...]							
32. How consistent do you feel the information you received from different healthcare	1 Very conflicting	2	3 Neither conflicting,	4	5 Very consistent	I did not receive any		

professionals is regarding the following? [single response per row]				nor consistent			information on this topic
	Medications to take during pregnancy						
	What to do prior to becoming pregnant						
	How to manage pregnancy overall						
	When to stop medications						
	Risk of medication on your pregnancy outcome						
	Medications to take during breastfeeding						

1 Adapted from Tanaka et al. Rheumatol Int 2023;43:721–33. <sup>a</sup>Screening and demographic questions are not included.

1 *Dermatologist questionnaire*

Question <sup>a</sup>	Response			
Q1. What percentage of your female patients with psoriasis fall into the following age groups? [numeric response; sum up to 100%]	<ul style="list-style-type: none"> <li>• &lt;18 years old</li> <li>• 18–35</li> <li>• 36–45</li> <li>• 46–64</li> <li>• 65+</li> </ul>			
Q2. What percentage of your female patients between the age of 18–45 with psoriasis do you currently prescribe a TNFi treatment? [numeric response; range 0–100%]	<ul style="list-style-type: none"> <li>• Please enter a number</li> </ul>			
Q3. How comfortable are you in prescribing TNFi therapy for the following types of patients? [single response per row]		Not at all comfortable	Neutral	Very comfortable
	All female patients between the age of 18–45	1	2	3
	Female patients who may become pregnant within the next few years	1	2	3
	Female patients who are actively trying to become pregnant	1	2	3
	Female patients who are pregnant	1	2	3
Female patients who are breast feeding	1	2	3	
Q4. Do you recommend that your female patients discontinue a TNFi agent prior to pregnancy? [single response]	<ul style="list-style-type: none"> <li>• Yes</li> <li>• No</li> </ul>			
Q5. How many months prior to pregnancy would you recommend that TNFi therapy is discontinued? [single response, based on Q4 response]	<ul style="list-style-type: none"> <li>• Immediately prior / as soon as pregnancy is suspected and/or confirmed</li> <li>• Up to 3 months prior</li> <li>• 3 to less than 6 months prior</li> <li>• 6 to less than 9 months prior</li> <li>• 9 to less than 12 months prior</li> <li>• 12 months+ prior</li> </ul>			

<p>Q6. For your female patients who become pregnant while they are taking a TNFi agent, in what percentage of patients is the decision made to discontinue her biologic treatment? [single response]</p>	<ul style="list-style-type: none"> <li>• For less than 10% of patients</li> <li>• For 10% to less than 25% of patients</li> <li>• For 25% to less than 50% of patients</li> <li>• For 50% to less than 75% of patients</li> <li>• For 75% or more of patients</li> </ul>																																																					
<p>Q7. Hypothetically, what, if anything, would make you more comfortable with using TNFi agents among female patients between the age of 18-45 who may become pregnant in the future? [multiple response]</p>	<ul style="list-style-type: none"> <li>• More safety data for child 5 years post delivery</li> <li>• More safety data during pregnancy</li> <li>• More lactation data</li> <li>• A multidisciplinary discussion (Obstetrician etc).</li> <li>• Recommendation from a Scientific Leader (Key Opinion Leader)</li> <li>• Nothing</li> </ul>																																																					
<p>Q8. How strongly do you agree with the following statements? [single response per row]</p>	<table border="1"> <thead> <tr> <th></th> <th>Strongly Disagree</th> <th>Somewhat Disagree</th> <th>Neutral</th> <th>Somewhat Agree</th> <th>Strongly Agree</th> </tr> </thead> <tbody> <tr> <td>Female patients 18-45 should avoid TNFi therapies until after pregnancy</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> </tr> <tr> <td>Once a woman becomes pregnant she should discontinue TNFi treatment</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> </tr> <tr> <td>Women that are breastfeeding should not be on a TNFi agent</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> </tr> <tr> <td>If a patient's disease is controlled during pregnancy, it reduces the risk of pregnancy complications</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> </tr> <tr> <td>Keeping auto-immune disease controlled during pregnancy is my primary goal</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> </tr> <tr> <td>During pregnancy I typically co-manage the auto-immune disease with other specialities (e.g. Obstetricians and Gynaecologists, Primary Care Physicians etc.)</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> </tr> <tr> <td>If there was a TNFi that could be used throughout pregnancy, I would be comfortable that my patients stay under treatment with this TNFi throughout their pregnancy</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> </tr> </tbody> </table>							Strongly Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Strongly Agree	Female patients 18-45 should avoid TNFi therapies until after pregnancy	1	2	3	4	5	Once a woman becomes pregnant she should discontinue TNFi treatment	1	2	3	4	5	Women that are breastfeeding should not be on a TNFi agent	1	2	3	4	5	If a patient's disease is controlled during pregnancy, it reduces the risk of pregnancy complications	1	2	3	4	5	Keeping auto-immune disease controlled during pregnancy is my primary goal	1	2	3	4	5	During pregnancy I typically co-manage the auto-immune disease with other specialities (e.g. Obstetricians and Gynaecologists, Primary Care Physicians etc.)	1	2	3	4	5	If there was a TNFi that could be used throughout pregnancy, I would be comfortable that my patients stay under treatment with this TNFi throughout their pregnancy	1	2	3	4	5
	Strongly Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Strongly Agree																																																	
Female patients 18-45 should avoid TNFi therapies until after pregnancy	1	2	3	4	5																																																	
Once a woman becomes pregnant she should discontinue TNFi treatment	1	2	3	4	5																																																	
Women that are breastfeeding should not be on a TNFi agent	1	2	3	4	5																																																	
If a patient's disease is controlled during pregnancy, it reduces the risk of pregnancy complications	1	2	3	4	5																																																	
Keeping auto-immune disease controlled during pregnancy is my primary goal	1	2	3	4	5																																																	
During pregnancy I typically co-manage the auto-immune disease with other specialities (e.g. Obstetricians and Gynaecologists, Primary Care Physicians etc.)	1	2	3	4	5																																																	
If there was a TNFi that could be used throughout pregnancy, I would be comfortable that my patients stay under treatment with this TNFi throughout their pregnancy	1	2	3	4	5																																																	
<p>Q9. For women who are pregnant and are prescribed TNFi therapy, how concerned are you</p>	<ul style="list-style-type: none"> <li>• Very concerned</li> <li>• Somewhat concerned</li> <li>• Neutral</li> </ul>																																																					

regarding adverse events, including infection or birth outcomes? [single response]

- Somewhat unconcerned
- Not at all concerned

1 Adapted from Tanaka et al. Rheumatol Int 2023;43:721–33. <sup>a</sup>Screening and demographic questions are not included.

1 **Supplementary Tables**

2 **Table S1. Patient demographics and disease characteristics**

<b>Patients</b>	<b>Australia (n=27)</b>	<b>Japan (n=31)</b>
<b>Age group, years, n (%)</b>		
18–30	6 (22)	7 (23)
31–40	20 (74)	19 (61)
41–45	1 (4)	5 (16)
<b>Pregnant, n (%)</b>		
In the past 2 years	13 (48)	14 (45)
2–5 years ago	14 (52)	17 (55)
<b>Self-reported PSO severity, n (%)</b>		
Moderate	18 (67)	29 (94)
Severe	9 (33)	2 (6)
<b>Time of PSO diagnosis, n (%)</b>		
Before pregnancy	11 (41)	29 (94)
During pregnancy	16 (59)	2 (6)
<b>Medications taken before pregnancy, n (%)</b>		
TNFi <sup>a</sup>	15 (56)	6 (19)

3 [a] The survey question did not specify the indication as PSO ('What treatment were you taking before  
4 your pregnancy?'). PSO: psoriasis; TNFi: tumor necrosis factor inhibitors.

1 **Table S2. Dermatologist demographics**

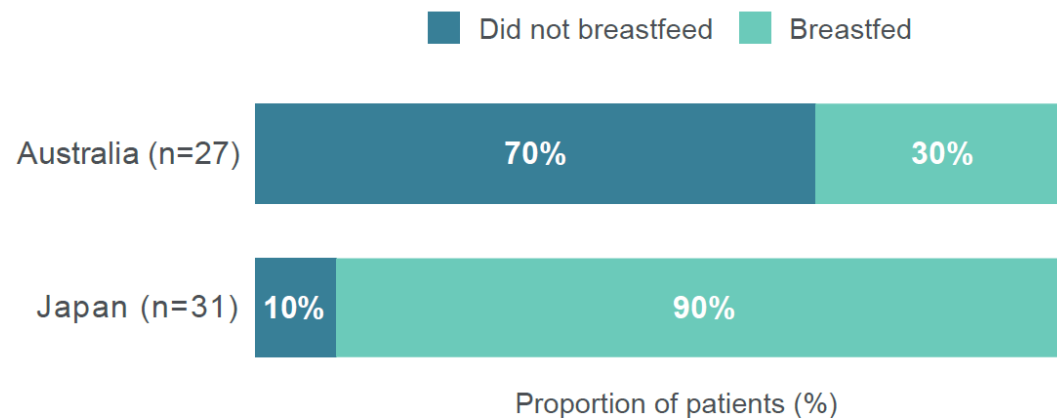
Dermatologists	Australia (n=40) <sup>a</sup>	Japan (n=97)
<b>Age group, years, n (%)</b>		
<40	4 (10)	43 (44)
40–<50	10 (26)	32 (33)
≥50	19 (49)	22 (23)
Prefer not to answer	6 (15)	0
<b>Gender</b>		
Male	18 (46)	68 (70)
Female	20 (51)	29 (30)
Prefer not to answer	1 (3)	0

2 [a] All percentages for demographic data were calculated for n=39 respondents from Australia, as this  
 3 information was not available for 1 respondent.

1 **Supplementary Figures**

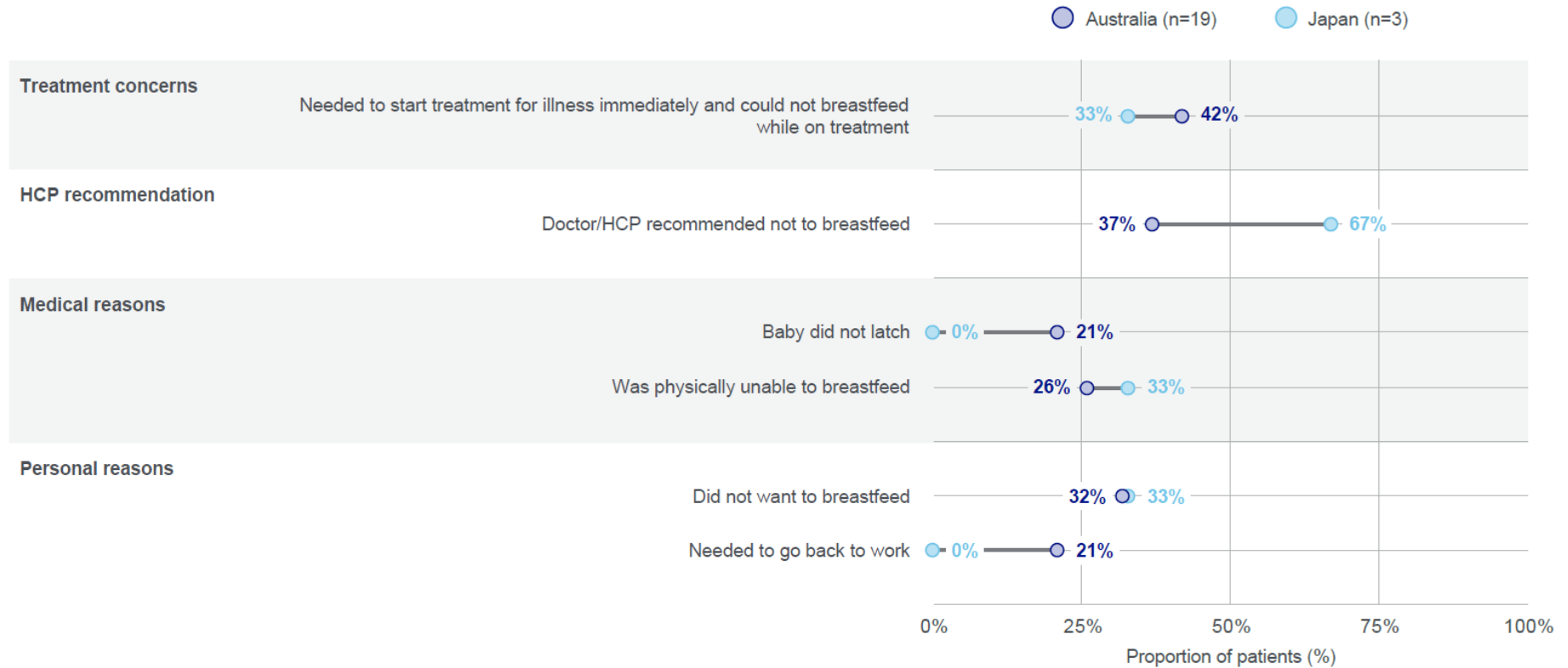
2 **Figure S1. Breastfeeding among women with PSO**

3 **a. Proportion of women with PSO that did not breastfeed their baby**





1 **b. Patient-reported reasons for not breastfeeding**



2  
3 Data should be interpreted with caution due to small n numbers. (a) 'Did you breastfeed your baby?'; (b) 'You indicated that you did not breastfeed your baby. Can you  
4 indicate what reasons you had for not doing so?' Results reported for those who indicated 'no' in question (a). All possible answers are shown, except for the 'None of the  
5 above' (1 [5%] response from an Australian patient and 1 [33%] response from a Japanese patient) and 'Other' categories (no responses were recorded). HCP: healthcare  
6 professional; PSO: psoriasis.