

Online Supplement

Table 5 – KSQ item reduction

Item Number	Item	Reason for exclusion
1	I have had trouble starting things because of tiredness	1
2	I have felt frustrated	5
3	I have had trouble finishing things because of tiredness	1
4	I have had trouble concentrating	5
5	I have lacked motivation	5
6	I have been affected by pain	3
7	I have felt tired	5
8	I have felt anxious	3
9	I have often felt down or depressed	3
10	I have little interest or pleasure in doing things	1
11	My relationships with friends/family/colleagues have been affected	3
12	I have needed help with everyday activities such as housework or bathing and dressing	2
13	I have felt aches and pains in my muscles/joints	5
14	I have felt embarrassed	5
15	I have felt my mobility is limited	4
16	I have worried about my sexual function	4
17	I have worried about my appearance	3
18	I have worried about my weight	5
19	I have worried about my sarcoidosis	5
20	I have worried I will not get better	3
21	I have worried about dying	3
22	I have felt in control of my sarcoidosis	3
23	My sleep has been disturbed	3
24	I have had trouble falling asleep	3
25	My sex drive has been affected	3
26	Tiredness has interfered with my normal social activities such as going out with friends/family	5
27	My sexual relationships have been affected	1
28	Tiredness has affected my ability to work at home or at my job	1
29	Tiredness has bothered me	1
30	My cough has caused me pain/discomfort	5
31	I have been breathless climbing stairs or walking up slight inclines	5
32	I have been breathless walking on level ground	1
33	I have had to take deep breaths, also known as 'air hunger'	5
34	My chest has felt tight	5
35	I have had episodes of breathlessness	5
36	I have had a wheeze or whistling sound from my chest	3
37	I have experienced chest pains	5
38	I have had trouble breathing	1
39	I have had to clear phlegm (sputum) from my chest	3
40	My cough has been intense	2
41	My cough has disturbed my sleep	2

42	My sleep has been disturbed by breathlessness	2
43	I have had coughing bouts during the night	1
44	I have had had coughing bouts during the daytime (awake hours only)	1
45	I have worried about side effects of my medication for sarcoidosis	5
46	I have felt worse because of my medication	5
47	I have gained weight because of my medication	5
48	My sleep has been disturbed because of my medications	2
49	I have felt better because of my medications	3
50	I have been bothered by my skin problems	5
51	I have been worried about my skin lesion	1
52	I have been concerned about changes in colour of my skin lesions	5
53	I have been embarrassed about my skin	5
54	My skin has affected my sexual activity/drive	2
55	My skin has been painful	2
56	My skin interferes with my working or other daytime activities	2
57	My skin has been itchy	4
58	I have had dry eyes	5
59	I have had difficulty with bright lights	5
60	My eyes have been red	5
61	I have had pain in/or around the eyes	5
62	I have had difficulty reading	5
63	I have had blurred vision	5
64	My eyesight has deteriorated because of my sarcoidosis	1
65	I have been worried about my eyesight	5

KEY

1=High inter-item correlations

2= Floor effect

3=Rasch analysis

4=Differential item functioning

5=Retained item

Table 6 . Summary of Rasch analysis for KSQ overall scales.

Rasch statistics	KSQ overall scales (combined modules)			
	Lung Health status (Lung-GHS)	Skin Health status (Skin-GHS)	Eye Health status (Eye-GHS)	Lung, Skin Health status (Lung-Skin-GHS)
Number of items	16	13	17	19
Chi square fit p value	0.362	0.832	0.688	0.363
Mean Item fit residual (SD)	0.23 (0.9)	0.28 (1.2)	0.12 (1.0)	0.4 (1.0)
Mean person fit residual (SD)	-0.1(1.4)	-0.1(1.3)	-0.2(1.3)	0.0(1.3)
Person separation index	0.91	0.91	0.91	0.93
Cronbach's alpha coefficient	0.94	0.92	0.92	0.94

Chi squared statistic assesses item-trait interaction; non-significance indicates a good fit to the Rasch model ($p > 0.05$). The mean person and item fit residuals are item-person interaction statistics that are z transformed; a good fit to the Rasch model is when they approximate to a mean (standard deviation) of 0(1). The person separation index (PSI) assesses how well KSQ discriminates subjects with differing levels of health status. The Cronbach's alpha coefficient is a measure of internal reliability. A PSI and Cronbach's alpha coefficient ≥ 0.7 is considered acceptable. GHS=General health status.

Table 7. Predictors of health status

Module	Predictor	Average change in Health Status per unit change in each predictor		
		Univariate unstandardised coefficient (95% CI; p value)	Multivariable unstandardised coefficient (95% CI; p value)	Multivariable Standardised coefficient (95% CI; p value)
General Health Status	FVC % predicted	0.47 (0.25-0.70) p<0.001	0.46 (0.24-0.68) p<0.001	0.31 (0.16-0.45) p<0.001
	Gender	12.03 (4.45-19.61) p=0.02	13.90 (6.00-21.80) p=0.001	0.25 (0.11-0.39) p=0.001
	Number of organs involved	-13.58 (-21.25--5.91) p=0.01	-9.81 (-17.59--2.04) p=0.014	-0.18 (-0.32--0.04) p=0.014
	Immunosuppressant medications	-19.82 (-28.48--11.31) p<0.001	-13.80 (-22.61--4.98) p=0.002	-0.22 (-0.37--0.08) p=0.002
Lung	FVC % predicted	0.57 (0.35-0.80) p<0.001	-	-

Definitions of abbreviations: CI= Confidence interval; FVC= forced vital capacity. Multivariable analysis was not done for Lung module since there was only one independent variable. The Standardized Beta Coefficients are a measure of the contribution of each independent variable to health status.

Figure legends

Figure 4. Person-Item threshold distribution for KSQ General Health status module score.

Figure 5. Person-Item threshold distribution for KSQ Lung module score.

Figure 6. Person-Item threshold distribution for KSQ Medication module score.

Figure 7. Person-Item threshold distribution for KSQ Skin module score.

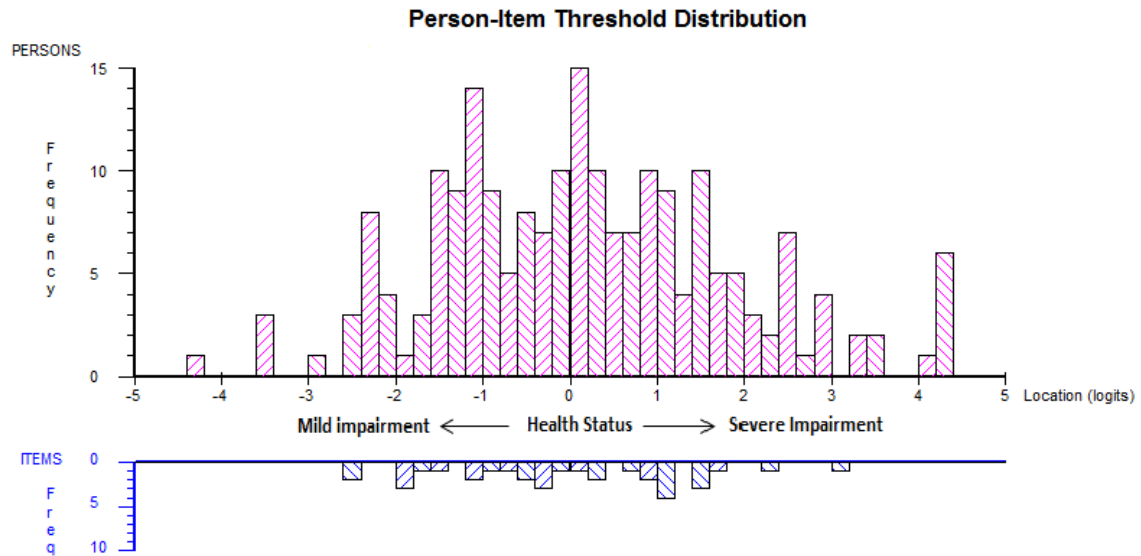
Figure 8. Person-Item threshold distribution for KSQ Eye module score.

Figure 9. Person-Item threshold distribution for KSQ overall Skin- Health status score.

Figure 10. Person-Item threshold distribution for KSQ overall Eye- Health status score.

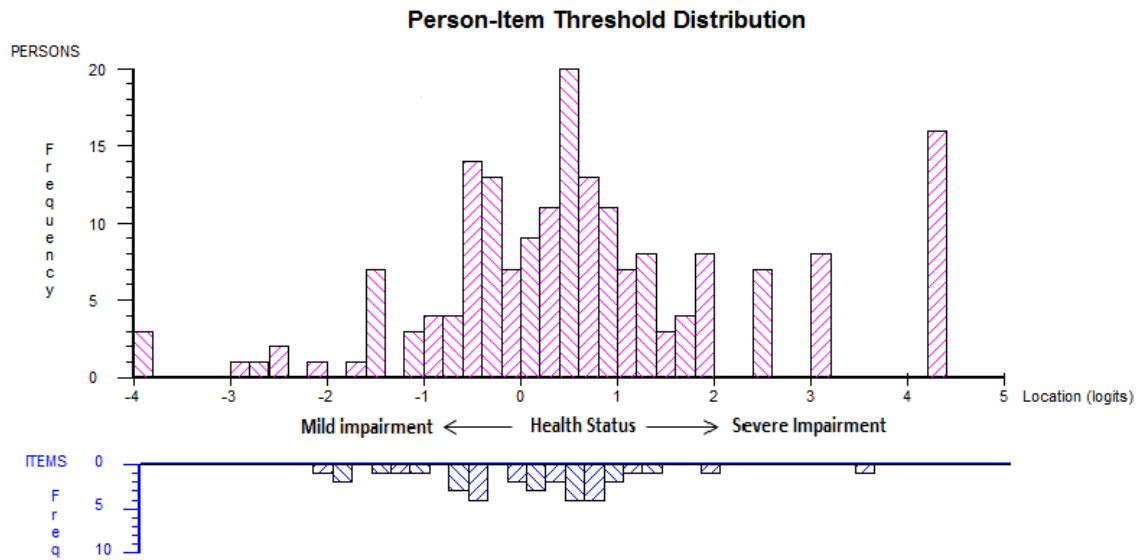
Figure 11. Person-Item threshold distribution for KSQ overall Lung- Skin- Health status score.

Figure 4. Person-Item threshold distribution for KSQ General Health status module score.



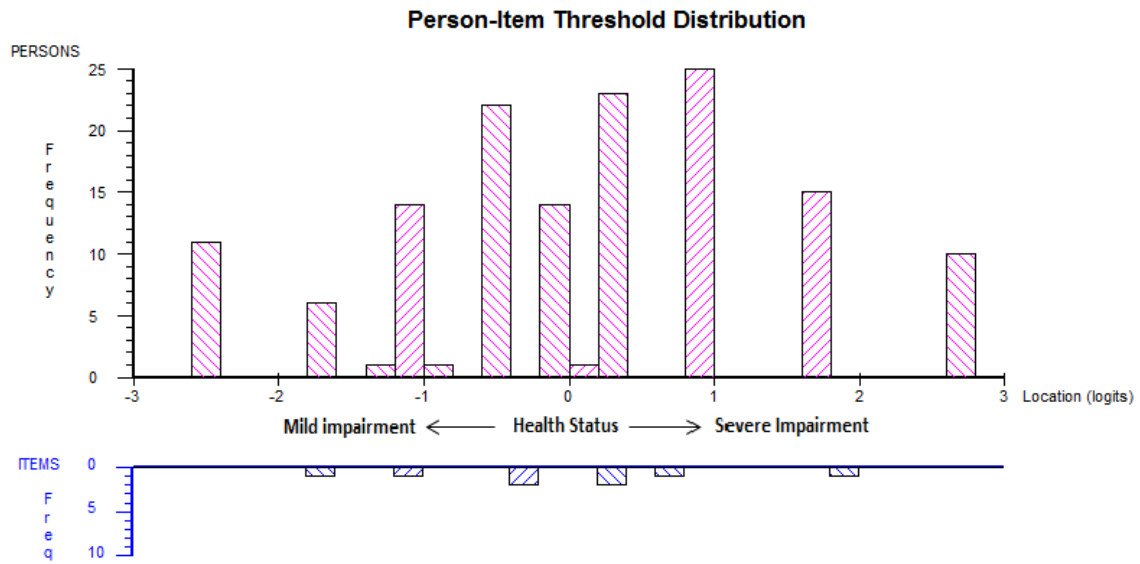
The x-axis represents severity of health status in logits (log transformed units). The item threshold frequency represents the number of item responses that measure health status at each level of impairment.

Figure 5. Person-Item threshold distribution for KSQ Lung module score.



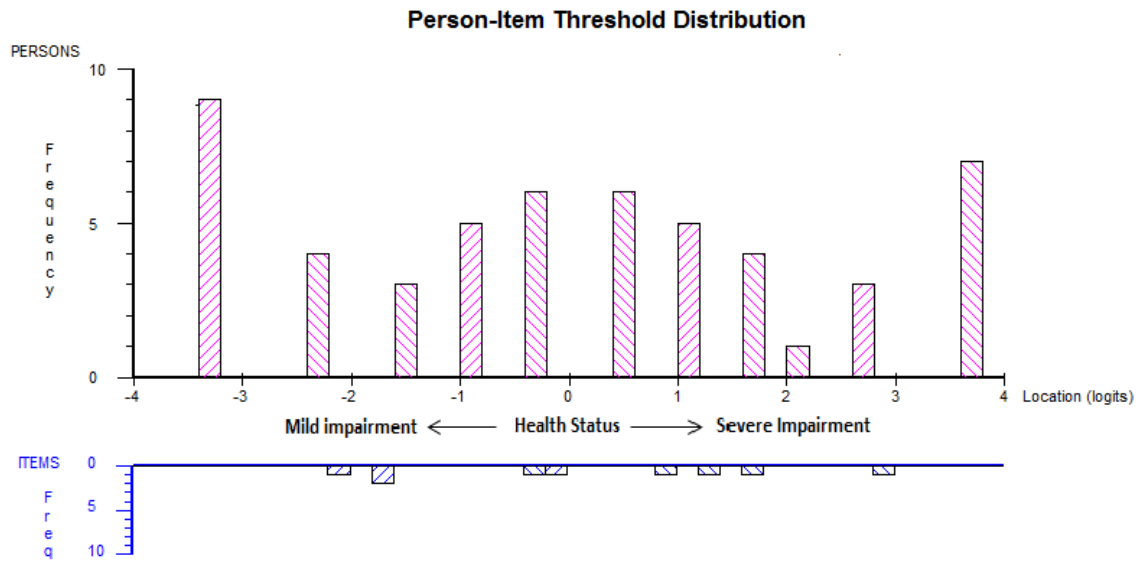
The x-axis represents severity of health status in logits (log transformed units). The item threshold frequency represents the number of item responses that measure health status at each level of impairment.

Figure 6. Person-Item threshold distribution for KSQ Medication module score.



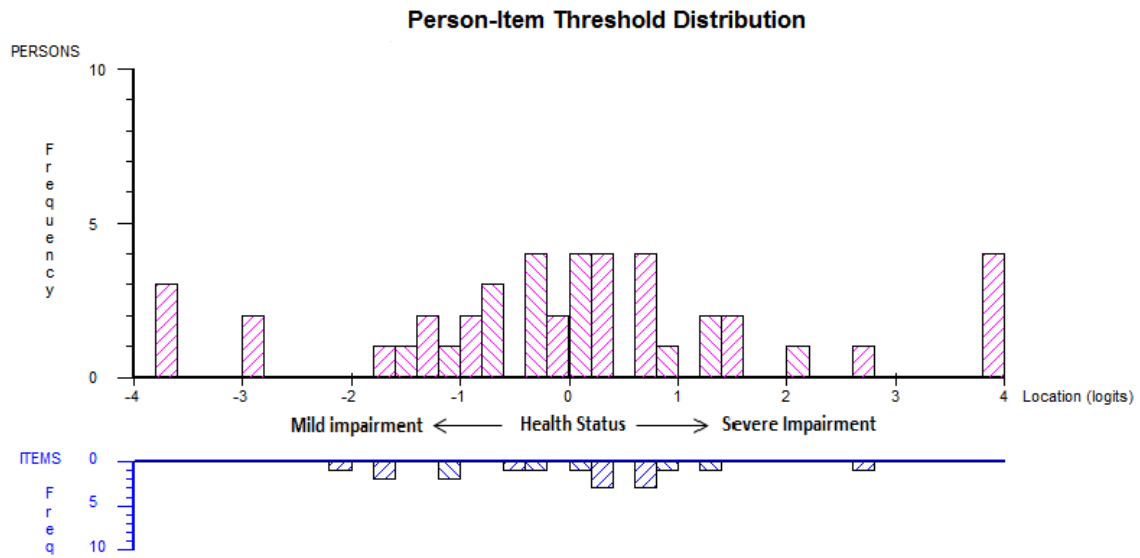
The x-axis represents severity of health status in logits (log transformed units). The item threshold frequency represents the number of item responses that measure health status at each level of impairment.

Figure 7. Person-Item threshold distribution for KSQ Skin module score.



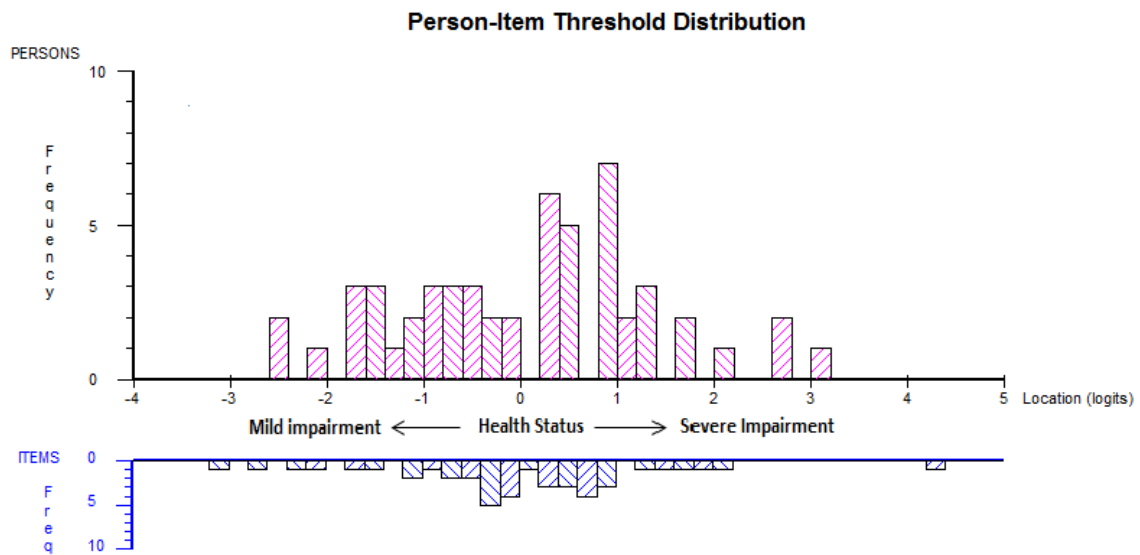
The x-axis represents severity of health status in logits (log transformed units). The item threshold frequency represents the number of item responses that measure health status at each level of impairment.

Figure 8. Person-Item threshold distribution for KSQ Eye module score.



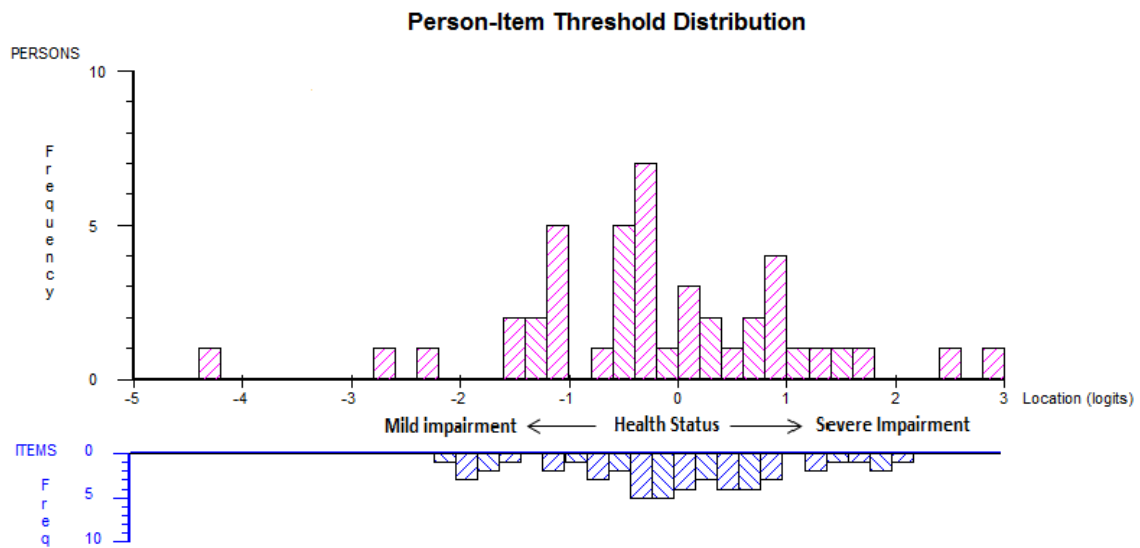
The x-axis represents severity of health status in logits (log transformed units). The item threshold frequency represents the number of item responses that measure health status at each level of impairment.

Figure 9. Person-Item threshold distribution for KSQ overall Skin- Health status score.



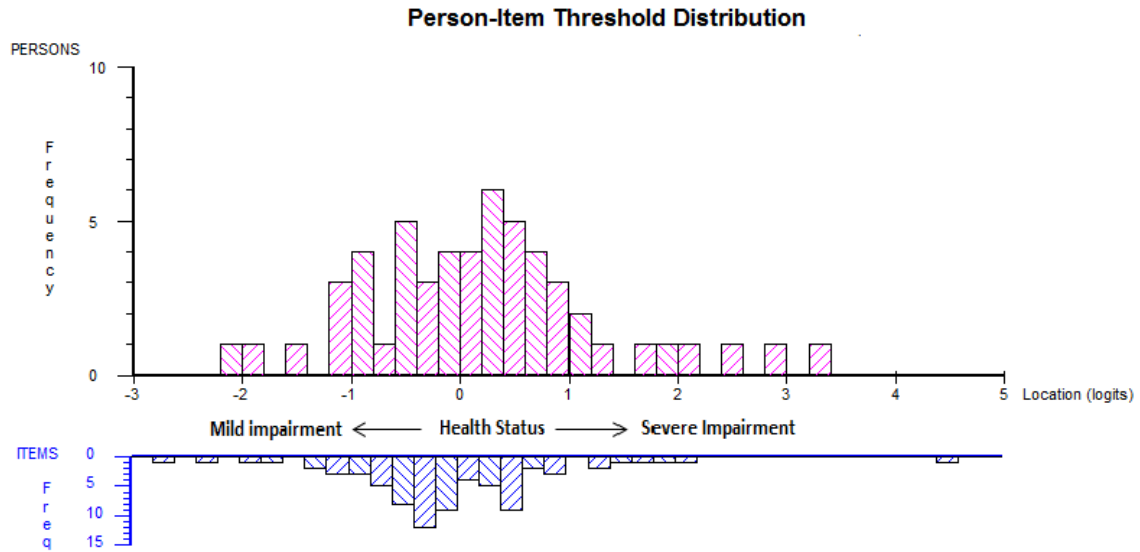
The x-axis represents severity of health status in logits (log transformed units). The item threshold frequency represents the number of item responses that measure health status at each level of impairment.

Figure 10. Person-Item threshold distribution for KSQ overall Eye- Health status score.



The x-axis represents severity of health status in logits (log transformed units). The item threshold frequency represents the number of item responses that measure health status at each level of impairment.

Figure 11. Person-Item threshold distribution for KSQ overall Lung- Skin- Health status score.



The x-axis represents severity of health status in logits (log transformed units). The item threshold frequency represents the number of item responses that measure health status at each level of impairment.