Dry eye symptoms using the Ocular Surface Disease Index in Sweden: a short report from a pilot study

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Abstract

The aim of this study was to investigate the prevalence of dry eye symptoms in the Swedish population using a web-based version of the ocular surface disease index (OSDI).

A web-based version of the OSDI questions was implemented in an online form using a software developed by Artologik. The link to the form was distributed via Linnaeus University social media pages. Basic demographic information such as age, sex and county of residence was also collected.

A total of 404 complete responses were received, 303 respondents (75%) were females, the median age = 39 (interquartile range = 28–53) years, median OSDI-score = 19 (interquartile range = 9–32). Crude prevalence of dry eye symptoms (categories mild to severe) was 65% (95% CI = 62–75). The difference in prevalence between males and females was statistically significant (chi-square test, $p = 0.007$).

The current study found that the prevalence of dry eye symptoms among a sample of the Swedish population was 65%. These results highlight the need to investigate further the prevalence and risk factors for dry eye disease in the Swedish population.

Keywords: dry eye disease, dry eye symptoms, OSDI, prevalence, Rasch analysis

Introduction

Dry eye disease (DED) is a syndrome related to tear film and ocular surface abnormalities (Stapleton et al., 2017; Valderas et al., 2008). Dry eye symptoms include, for instance, ocular irritation or burning, foreign body sensation, pain, grittiness, photophobia and visual disturbance, causing eye discomfort (Javadi & Feizi, 2011; Kaštelan et al., 2013). As reported by Stapleton et al. (2017), DED can affect up to 50% of the population in certain countries. Prevalence as high as 73% has also been reported (Uchino et al., 2006). Prevalence depends on which diagnostic criteria are used and sample characteristics (for example age). In general, symptoms of dry eye are more frequent among women and older people (Uchino et al., 2011; Um et al., 2014), although they are also common among young people (Stapleton et al., 2017; Zhang et al., 2012). It must be noted that diagnosis of DED is different from symptoms of DED. The diagnosis of DED requires additional clinical testing such as Schirmer, tear break up time, corneal staining and/or meibomian gland dysfunction assessment (Craig et al., 2017).

Some authors consider DED challenging to diagnose because there are no specific "dryness biomarkers" in the surface of the eye that would give a clear answer about abnormalities in ocular surface lubrication (Efron, 2018). One of the most relevant aspects of the diagnosis and management of dry eye is characterisation of the symptoms (Craig et al., 2017). The use of patient reported outcomes is, therefore, fundamental in providing accurate records of symptoms. In general, the use of patient reported outcomes has advantages such as early detection of medical conditions, monitoring treatments and facilitating patient-clinician communication (Nelson et al., 2015; Pesudovs et al., 2013; Valderas et al., 2008). The Tear Film & Ocular Surface Society Dry Eye Workshop II (TFOS DEWS II) diagnostic methodology subcommittee recommend the use of symptomatology questionnaires when diagnosing, monitoring, and managing DED (Wolffsohn et al., 2017).

The ocular surface disease index (OSDI, Allergan plc, Irvine, CA) questionnaire and the Dry Eye Questionnaire (DEQ-5) have been validated and are recommended by the TFOS DEWS II diagnostic methodology subcommittee (Dougherty et al., 2011; Schiffman et al., 2000; Wolffsohn et al., 2017). Even though the OSDI was developed for use in clinically controlled environments, it has been used in prevalence studies outside clinical settings to determine the occurrence of dry eye symptoms in the general population (Hernandez-Llamas et al., 2020; Schiffman et al., 2000). Allergan Inc. has developed a smartphone application which makes it possible to use the OSDI questionnaire remotely, which allows unlimited use of this symptomatology scale (Inomata et al., 2019). More recently, Inomate and colleagues implemented the OSDI in their unsupervised monitoring app "DryEyeRhythm" (Inomata et al., 2019; Okumura et al., 2020)]. These studies indicate that the OSDI is a good instrument for monitoring dry eye symptoms remotely.

There is currently limited information about the prevalence of symptoms of dry eye in the Swedish population. This gap in knowledge can be investigated by using a digital version of the OSDI and making it available to remote respondents. The aim of this study was to investigate the prevalence of dry eye symptoms in a sample of the Swedish population using a web-based version of the OSDI.

Materials

Study sample

Participants answered the OSDI questions online in a form implemented in the "Survey and report" software developed by Artologik (Survey & Report, v4.3.9.5) (Schiffman et al., 2000; Walt et al., 1997). Sample size calculations made with OpenEpi software (https://www.openepi.com) indicated that $n = 384$ answers would be enough to estimate with a confidence level of 95% and an absolute precision of ±5 percentage units assuming a prevalence of 50% in the sample. The link to the form was distributed via Linnaeus University social media pages ("twitter" and "Facebook") and participation was encouraged in a message running on internal screens at the campus. The form also collected basic demographic information such as age, sex a geographic location (county). These data were anonymised. The link to the form was public – anyone with the link was able to answer the questions – but only one respondent per device was allowed by the system. In other words, according to the platform provider Artologik, the server can identify devices previously used to answer the questionnaire and rejects multiple attempts from those devices.

Dry eye symptoms scale

The OSDI is a self-administrated symptoms questionnaire consisting of 12 questions. The scale is expected to capture symptoms experienced during the previous week regarding ocular discomfort, vision related functions and environmental triggers of ocular discomfort. Subjects rate symptoms on a scale from 0–4 (0 = none of the time, 1 = some of the time, 2 = half of the time, 3 = most of the time, 4 = all the time). For questions 5 to 12 the option "not applicable" is available. The final individual score is computed using the formula: OSDI = (sum of scores) x 25/ (number of questions answered).

The maximum score is 100 and the cut-off values used in this study for diagnosis of dry eye symptoms were: normal (non-symptomatic) for scores below 13 and symptomatic for scores 13 or above (Schiffman et al., 2000; Walt et al., 1997; Willcox et al., 2017). The OSDI was available in two languages, English and Swedish, and subjects selected their preferred language. In the Appendix we provide a brief description of a quality check of the psychometric characteristics of the OSDI according to the information available from this study. Results of the survey were analysed using descriptive statistics, mean and standard deviation (*SD*), median and interquartile range (*IQR*), counts and percentages with 95% confidence interval (95% CI). The chi-square test was used to determine differences between counts.

Ethical considerations

The identity of the participants was unknown and no sensitive information was collected. According to advice from the Ethical Advisory Board in Southeast Sweden, ethical approval was not required for this study (Dnr: EPK 570-2019). Before responding to the survey, all participants were informed that their responses would be anonymised and used to determine the prevalence of dry eye symptoms.

Results

A total of 404 complete responses were received, 303 participants (75%) were female and 101 (25%) were male, 39 out of 404 answers were given using the English version of the OSDI. The mean and the median age of the survey respondents were 41 (SD = 14.1) years and 39 (IQR = 28–53) years respectively. Median OSDI-score for the total sample were 19 (IQR = 9–32).

The crude prevalence of dry symptoms (categories mild to severe) in the study sample were 65% (95% CI: 62%–75%). The respondents were divided into age categories (19–30, 31–40, 41–50, 51+ years) and the prevalence of symptoms was computed accordingly. Figure 1 shows category specific prevalence, differences between age groups were not statistically significant (chi-square (3, n=404) = 4.56 p=0.21). Dividing the sample by sex, 68% (95% CI: 63–73%) of the females and 53% (95% CI: 44–63%) of the males reported dry eye symptoms. The difference in prevalence between males and females was statistically significant (chi-square (1, n=404) = 7.31 p=0.007).

Discussion

The current study used an online version of the OSDI to investigate the frequency of dry eye symptoms in a sample of the Swedish population. This was the first study reporting prevalence of dry eye symptoms in a sample of the Swedish population. The results point to a high prevalence of dry eye symptoms.

The crude prevalence of dry eye symptoms in the sample was 65% (95% CI: 62%–75%), this prevalence is in line with previous studies (Bakkar et al., 2016; Hashmani et al., 2020; Shanti et al., 2020). For example, using a cut-off for the OSDI similar to ours (score 13), Hashmani and colleagues found a prevalence of symptoms of dry eye amongst 2433 respondents to be 64.4%. In contrast, other studies found lower prevalence of symptoms in the general population (Farrand et al., 2017; Sherry et al., 2020). A possible explanation for the high prevalence in our study may be a biased sample. That is, it is possible that people with ocular surface problems or dry eye symptoms were more likely to answer the anonymous questionnaire. Another possible explanation may be that the majority of participants were female, and would be expected to report dry eye symptoms more often than males (Farrand et al., 2017; Shanti et al., 2020). In line with that, results of the current study revealed a difference of 15% in prevalence of symptoms between males and females.

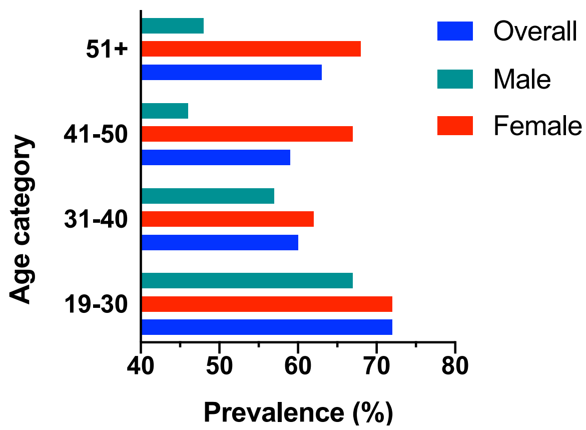

Figure 1: *Category specific prevalence of dry eye symptoms. Bars show the prevalence in percentage.*

More people in the youngest age group (19–30 years) reported symptoms than the other age groups. Despite the differences between age categories, in the current study they failed to reach statistical significance. The high prevalence of symptoms in the younger group was an unexpected finding. Most previous studies have shown that higher age is a risk factor for DED (Caffery et al., 2019; Shanti et al., 2020). However, some studies have found that dry eye symptoms are also common in young people and that this may be related, for example, to prolonged use of computers and smartphones (Asiedu et al., 2016; Choi et al., 2018; Uchino et al., 2013). In addition, young people are more likely to be contact lens wearers, and contact lens wear can increase the likelihood of reporting dry eye symptoms (Bakkar et al., 2016; Morgan et al., 2019). Together, these factors may explain the high prevalence of symptoms among young respondents.

The current pilot study has some limitations. Despite the sample being large enough to determine the prevalence of dry eye symptoms in the Swedish population, the sample is not representative of the Swedish population. Most likely respondents were working or studying at the university, and they were likely to be spending more time looking at screens than the general population and that can interfere with our results. Although, it must be said that symptoms of dry eye still exist regardless of the underlying causes.

The current study found a prevalence of 65% for dry eye symptoms among a sample of the Swedish population. The results highlight the need for investigation of the prevalence and risk factors for dry eye disease in the Swedish population, with comprehensive studies that must include clinical tests and self-reporting of symptoms.

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Appendix A — Ocular Surface disease Index questionnaire in Swedish Language

Frågeformulär - Störning i ögats horn- eller bindhinna

(Swedish version of the OSDI)

Var vänlig och besvara följande frågor genom att kryssa i den ruta som bäst överensstämmer med Ditt svar.

Har Du upplevt något av följande **under den senaste veckan**:

		Hela tiden	Största delen av tiden	Hälften av tiden	En del av tiden	Inget av tiden
1	Ögon som är känsliga för ljus?					
2	Ögon som känns grusiga?					
3	Smärtsamma eller ömma ögon?					
4	Dimsyn?					
5	Dålig syn?					

Har problemen med Dina ögon inskränkt på något av följande **under den senaste veckan**:

		Hela tiden	Största delen av tiden	Hälften av tiden	En del av tiden	Inget av tiden	Ej aktuellt
6	Läsning?						
7	Mörkerkörning?						
8	Använda dator eller bankautomat (Bankomat, Minuten)?						
9	Titta på TV?						

Har Du haft besvär med Dina ögon vid några av följande situationer **under den senaste veckan**:

		Hela tiden	Största delen av tiden	Hälften av tiden	En del av tiden	Inget av tiden	Ej aktuellt
10	Blåsigt väder?						
11	Platser eller områden med låg luftfuktighet (mycket torrt)?						
12	Ställen med luftkonditionering?						

Appendix B — Rasch analysis of the OSDI answers

Questionnaires that are expected to provide a clinically meaningful measure must be validated and tested for reliability using a trustworthy measurement theory (Ishaque et al., 2019; Khadka et al., 2013). A measurement theory is a theory of how the numbers generated by rating scales (scores) relate to measurements of the constructs (in this case the construct is "dry eye symptoms") they seek to estimate (Hobart et al., 2007). There are a few commonly used methods to investigate the validity and the reliability of questionnaires or scales, namely, "classical test theory", "item response theory" and "Rasch measurements theory" (Petrillo et al., 2015). Item response theory and Rasch measurements theory are considered modern psychometric methods, but they apply contrasting approaches. Simplistically, Rasch tests if the data fit a mathematical model and item response tries to find a model that fits the data. These different approaches have distinct advantages whose discussion is outside the scope of this report (Hobart et al., 2007; Kandel et al., 2017). Nonetheless, one important and widely accepted advantage of Rasch analysis is the use of a common log-odds unit (logit) scale for person measures and items difficulty (Bond & Fox, 2015; Dogan et al., 2020; Macedo et al., 2017; Melin et al., 2020).

Rasch analysis

The simplest form of the Rasch model is when responses are dichotomous (yes / no answers) as given here. The model assumes that the probability of a given respondent affirming an item is a logistic function of the relative distance between the item location and the respondent location on a linear scale (Bond & Fox, 2015; Pallant & Tennant, 2007). That is, the probability that a person will affirm an item is a logistic function of the difference between the person's level of, for example, dry eye symptoms (θ) and the level of dry eye symptoms expressed by a positive response to the item (b), and only a function of that difference:

$$p_{ni} = \frac{e^{\theta_n - b_i}}{1 + e^{\theta_n - b_i}}$$

where p_{ni} is the probability that person n will affirm the item i. The formula can be expressed as a logit model:

$$\ln\left(\frac{P_{ni}}{1 - P_{ni}}\right) = \theta_n - b_i$$

where ln is the natural logarithm, P is the probability of person n affirming item i. Consider a scenario of a yes / no question and that the probability of each response category (yes, no) is 0.5. When we replace that in the expression above it becomes: $\ln\left(\frac{0.5}{1-0.5}\right)$, which corresponds to 0; therefore, $\theta_n - b_i = 0$ logits, or $\theta_n = b_i$, and this indicates that the symptoms experienced by the respondent (person measure) are equal to the symptoms measured by the question (item difficulty). Fitting data to the Rasch model places items and persons parameters estimates on the same logit scale, and it is this that gives the linear transformation of the raw score (Bond & Fox, 2015; Glas & Verhelst, 1995; Linacre, 1992; 2002; Pallant & Tennant, 2007).

For the Rasch analysis of the OSDI, higher person measures indicate more symptoms and are reported in units of logits (Linacre & Wright, 1989), see Figure B1. Item measures are also expressed in logits and, with the coding used for the current analysis, higher item measures indicated corresponds to symptoms "more difficult to agree", see also Figure B1. Under Rasch conditions, point-biserial (or point-measure) correlations should be positive (see Table B1 column heading "PTMEASURAL"=> "corr."), so that the item-level scoring accords with the latent variable. However, the size of a positive correlation is of less importance than the fit of the responses to the Rasch model, indicated by the mean-square fit statistics (MNSQ), see Table B1 columns with heading "Infit" and "Outfit". Fit statistics is a quality control mechanism that evaluates how well the data conform to the Rasch model. When data deviate from the Rasch model, the causes need to be considered and the misfitting person or item may have to be removed. Fit can be assessed using two statistical indicators: infit ("inlier-sensitive or information-weighted fit") and outfit ("outlier-sensitive fit") (Linacre, 2002). Boone et al. and others recommend examining standardised fit statistics outfit (MNSQ) before removing any Items or Persons from the analysis. Wright and Linacre suggest that MNSQ values less than 1.4 are acceptable for rating scale data (Boone & Noltemeyer, 2017; Linacre, 1994).

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                 ##   |S I3S-painful or sore eyes
                         I4S-blurred vision
                ###   |  I6A-reading
                         I8A-working w/computer or ATM
                .##   |
                 ##   |  I7A-driving at night
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              .####   |
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              #####   |  I12E-areas air conditioned
                         I2S-eyes...fell gritty
            .######   |S I10E-windy conditions
                         I1S-eyes sensitive to light
            #######   |  I11E-places w/low humidity
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EACH "#" IS 2: EACH "." IS 1
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Figure B1: *Person-item map, the left side of the vertical line shows person measure – respondents with more severe symptoms are shown at the top. The right-hand side of the vertical line shows the item measure – items with higher measure correspond to symptoms "more difficult to agree" or "more rare". In other words, symptoms there were reported less often. Measure is given in logits, M = mean, S = standard error, T = two standard errors.*

Evaluating the functioning of a rating scale involves the analysis of response probability curves as shown in Figure B2. Each rating category should have a peak on the curve, revealing that it is the most probable category for some portion of the construct (Bond & Fox, 2015; Boone & Noltemeyer, 2017). In a typical graph the probability of a response is given on the vertical axis (from 0 to 1), each potential response options (0, 1, 2, 3, 4) should be "the most probable" for a portion of the horizontal axis (Linacre, 2002).

Rasch analysis also includes person and item reliability indices. The item reliability index "indicates the replicability of item placements along the pathway if these same items were given to another same-sized sample of persons who behaved in the same way". It varies between 0 and 1 where higher values indicate better reliability (Bond & Fox, 2015). Item reliability gives an answer to the question: If another sample was given these same items, would the item estimates remain stable? Likewise, person reliability index "indicates the replicability of person ordering we could expect if this sample of persons were given another set of items" (Bond & Fox, 2015). That is, in the case of dry eye symptoms, given another set with the same number and distribution of items supposed to measure the same construct (dry eye symptoms), will respondent A still be estimated as being more symptomatic than respondent B and B more symptomatic than respondent C (Bond & Fox, 2015)?

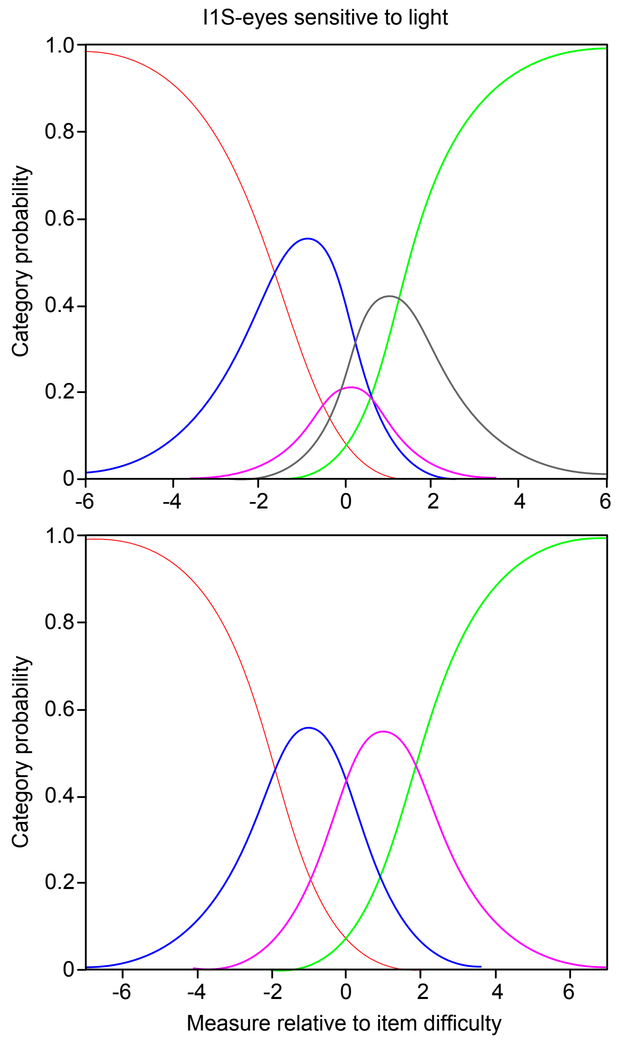

Figure B2: *The top graph shows the Rasch model category probability curves for item 1 showing the likelihood that a participant with problems will select a category. The scale (x-axis) symbolises the latent trait of "dry eye symptoms", with severity increasing towards the right. The y-axis represents the probability of a category being selected. Response categories: 0 – "none of the time" (red curve), 1 – "some of the time" (blue curve), 2 – "half of the time" (pink curve), 3 – "most of the time" (black curve), 4 – "all the time"(green curve). For any given point along this scale, the category most likely to be chosen by a participant is shown by the category curve with the highest probability. This shows that at no point was category 2 the most likely to be chosen, resulting in disordered thresholds. The bottom graph shows the effect of collapsing categories 2 and 3 into a single category (now shown in pink) with the resulting ordered response categories (category 4 is now shown in black).*

Person separation is used to classify how the instrument can distinguish between people. That is, low person separation with a relevant person sample implies that the instrument may not be sensitive enough to distinguish between high and low levels of symptoms. According to Boone and colleagues, person separation of 1.50 is acceptable, 2.00 is good, and 3.00 is excellent. When person separation is below acceptable more items may be needed. Item separation is used to verify the item hierarchy, it can vary from 0 to infinity and higher values indicate better separation. Item separation less than 3 implies that the sample is not large enough to confirm the item difficulty hierarchy (= construct validity) of the instrument (Boone & Noltemeyer, 2017).

A fundamental principle in Rasch theory is that individuals' and items' estimates depend on the magnitude of one quantity only, namely, the latent variable of interest. This is referred to as "unidimensional measurement" (Sjaastad, 2014). The concept of unidimensionality is frequently defined as a single latent trait being able to account for the performance of items forming a questionnaire. It represents a fundamental requirement when an item response theory model or a Rasch model is used in order to obtain a measurement for the latent trait of interest (Linacre, 1998). Mathematically, if there is only one dimension, called the Rasch dimension, captured by the model a principal component analysis on standardised residuals should not contain other significant dimensions (Brentani & Golia, 2007).

Rasch analysis of the OSDI

From the 404 participants, 39 answered the English version of the OSDI, answers from these respondents were filtered (their answers were excluded) before walking through the Rasch assessment of the OSDI.

The top graph of Figure B2 shows the category thresholds with the OSDI five-category response structure. It can be observed that category 2 – "half of the time" is never the most probable category and that makes the responses disordered. The bottom graph of Figure B2 shows the results of a four-category response structure, in which the categories 2 – "half of the time" and 3 – "most of the time" were combined. With four categories the scale shows the expected characteristics of ordered thresholds.

With the new response categories, the MNSQ fit statistics for item 5 was infit = 1.79 and outfit = 1.61, which is outside the acceptable range. When the removal of misfitting items (or persons) fails to improve the model, the cross-plot (measures before and after removing the problematic items or persons) should reveal a strong correlation. As shown in Figure B3, measures obtained with 11 items (after removal of item 5) were highly correlated with measures obtained with 12 items. Therefore, removal of the item failed to improve the model significantly. Although, given the qualitative assessment of the fit, the item was removed during the subsequent steps of the analysis.

Data was re-analysed after excluding item 5 and adjusting the rating scale by merging categories 2–3. An intermediate model showed that 25 participants showed fit statistics that were outside the criteria defined as acceptable fit. Because the person separation value was also below the recommended value (see the methods section for recommendations) the misfit participants were excluded from the final analysis. The final sample of Swedish respondents was formed of 340 responses (including 12 extreme scores that correspond to respondents with a total score of 0 in all items that they answered), the mean person measure was -1.95 logits (SE = 0.63), or -1.82 logits (SE = 0.58) if the 12 extreme cases were excluded. Person separation (extreme cases excluded) was: real = 2.04 and model = 2.17. Person reliability (extreme cases excluded) was: real = 0.81 and model = 0.83. In all instances, real values correspond to conservative estimates

Table B1: *Item statistics ordered by measures entry. The column "Model measure" shows the measure in logits. According to recommendations MNSQ fit values should be within the interval 0.7–1.4 (Linacre & Wright, 1989).*

Entry	Total	Total	Model		Infit		Outfit		PTMEASURE-AL		Exact match		Item
number	score	score	measure	S.E	MNSQ	ZSTD	MNSQ	ZSTD	corr.	exp.	obs%	exp%	
1	326	340	-0.62	0.09	1.12	1.59	1.19	2.34	0.60	0.69	51.8	56.7	I1S-eyes sensitive to light
2	315	340	-0.53	0.09	0.86	-1.84	0.97	-0.30	0.64	0.68	58.8	57.5	I2S-eyes...felt gritty
3	181	340	0.66	0.10	0.96	-0.41	0.86	-1.22	0.62	0.61	65.5	66.3	I3S-painful or sore eyes
4	183	340	0.64	0.10	0.96	-0.40	0.95	-0.41	0.60	0.61	65.9	66.2	I4S-blurred vision
5	Deleted												I5S-poor vision
6	194	330	0.47	0.10	0.96	-0.46	0.95	-0.39	0.63	0.62	64.6	64.5	I6A-reading
7	162	230	0.11	0.12	1.33	3.10	1.18	1.51	0.66	0.67	61.7	62.6	I7A-driving at night
8	184	319	0.51	0.10	0.94	-0.66	0.89	-0.99	0.66	0.62	64.9	64.9	I8A-working w/computer
9	148	310	0.84	0.11	0.82	-2.10	0.74	-2.15	0.65	0.60	71.7	68.9	I9A-watching TV
10	311	323	-0.66	0.09	1.14	1.79	1.10	1.22	0.66	0.68	52.4	56.8	I10E-windy conditions
11	300	287	-0.88	0.09	0.9	-1.20	0.87	-1.60	0.76	0.71	58.8	56.6	I11E-places w/low humidity
12	271	296	-0.64	0.10	1.02	0.22	0.93	-0.75	0.73	0.69	57.2	57.3	I12E-areas air condition

when compared to model values.

Table B1 shows the item measure and fit statistics for the 11 items analysed, the mean item measure was 0.00 logits (SE = 0.10), the item separation was: real = 5.94 and model = 6.13. Item reliability was, both real and model, 0.97. All parameters for the 11 items were within the acceptable range of values given in the methods section. With 11 items and 340 persons, the principal component analysis of the standardised model residuals indicated an acceptable unidimensional measurement with first contrast eigenvalue of 1.99.

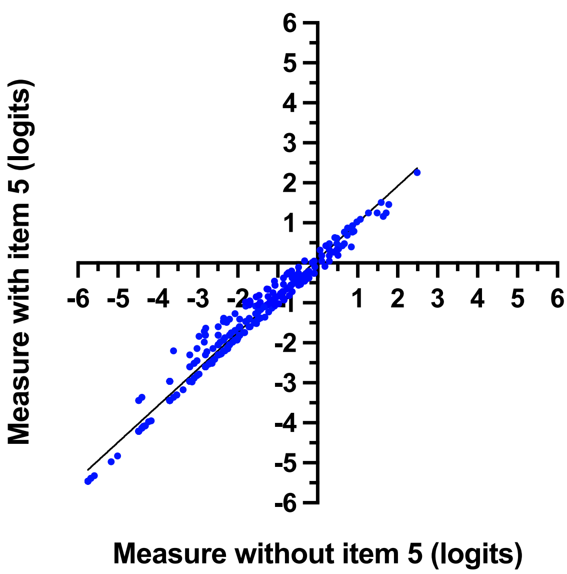

Figure B3: *Cross-plot of measures (dry eye symptoms) obtained with 12 and with 11 items (item 5 removed). The strong correlation, $r = 0.98$ ($p < 0.001$), indicates that removing item 5 fails to improve the model significantly.*

The Rasch analysis of the answers obtained from this online OSDI questionnaire confirmed acceptable measurement proprieties of this instrument.

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Symptomer på tørre øyne ved bruk av Ocular Surface Disease Index i Sverige: en kort rapport fra en pilotstudie

Sammendrag

Formålet med studien var å undersøke prevalens av symptomer på tørre øyne i den svenske befolkning ved hjelp av en nettbasert versjon av ocular surface disease index (OSDI).

OSDI spørsmålene ble satt inn i et skjema på internett ved hjelp av programvare utviklet av Artologik. Lenken til skjemaet ble sent ut via Linnéuniversitetets sosiale media. Bakgrunnsinformasjon som alder, kjønn og hjemstedsfylke ble også registrert.

Totalt ble 404 fullstendige svar mottatt, 303 (75%) respondenter var kvinnelige, median alder = 39 (interkvartilområde = 28–53) år, median OSDI-score = 19 (interkvartilområde = 9–32). Prevalens av symptomer på tørre øyne (kategorier milde til alvorlige) var 65% (95% CI = 62–75). Forskjellen i prevalens mellom kvinner og menn var signifikant (khikvadrattest, $p = 0.007$).

Denne studien fant at prevalensen av symptomer på tørre øyne blant et utvalg av Sveriges befolkning var 65%. Disse resultatene belyser behovet for videre undersøkelse av prevalens og risikofaktorer for tørre øyne i den svenske befolkning.

Nøkkelord: Tørre øyne, symptomer på tørre øyne, prevalens, Rasch-analyse

Sintomatologia da occhio secco utilizzando l'Ocular Surface Disease Index in Svezia: un breve report da uno studio pilota

Riassunto

Lo scopo di questo studio e' stato quello di investigare la prevalenze della sintomatologia da occhio secco nella popolazione svedese utilizzando una versione online dell'ocular surface disease index (OSDI).

E' stata utilizzata una versione online dell'OSDI in un formato implementato nel software "Survey and report" sviluppato da Artologik. L'indirizzo online e' stato distribuito grazie alle pagine di social media dell'Universita' Linnaeus. Anche le informazioni sulla demografia di base come eta', sesso e regione di residenza sono stato raccolte.

Un totale di 404 risposte complete sono state ricevute, 303 dei rispondenti (75%) erano femmine, con un'eta' media = 39 (rango interquartile = 28–53) anni, un punteggio OSDI medio = 19 (rango interquartile = 9–32). La prevalenza cruda di sintomi da occhio secco (categoria tra moderato e severo) e' stata del 65% (95% CI = 62–75). La differenza in prevalenza tra maschi e femmine e' stata statisticamente significativa (chi-square test, $p = 0.007$).

Il presente studio riporta che la frequenza di sintomi da occhio secco nel campione scelto di popolazione svedese e' stato del 65%. I risultati sottolineano la necessita' di investigare la prevalenza e i fattori di rischio dell'occhio secco nella popolazione svedese.

Parole chiave: occhio secco, sintomi da occhio secco, OSDI, prevalenza, Rasch analisi