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ABSTRACT BOOK
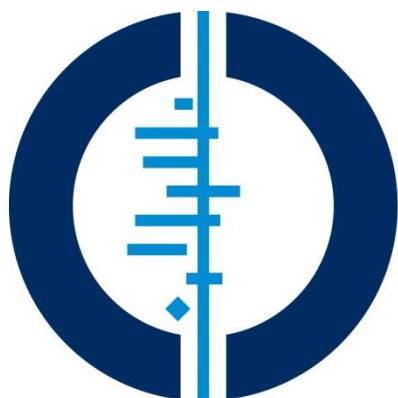
9th Croatian Cochrane Symposium

ABSTRACT BOOK

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Readability of different formats of information about Cochrane systematic reviews: a cross sectional study

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Background: Health literacy is considered to be an important predictor of health status. Cochrane uses different forms of presenting summary information from systematic reviews to different audiences, including press releases, scientific abstracts, plain language summaries (PLS) and Cochrane Clinical Answers (CCA).

Aims: We compared the readability of different formats of Cochrane systematic review summaries and of PLS written in different languages.

Methods: We retrieved all 164 press releases on Cochrane systematic reviews available in January 2016 and corresponding scientific abstracts, CCA and PLS in English, French, German and Croatian. SMOG index and characteristics of the text were measured using online program https://readable.io/; SMOG index for Croatian was calculated using an adapted formula. We also analyzed the characteristics of the four text formats, including the tone and style of a written text (https://www.ibm.com/watson/developercloud/tone-analyzer.html) and sentiment of the text (https://nlp.stanford.edu/sentiment/).

Results: CCA was the shortest and scientific abstract the longest format for presenting summary information from Cochrane systematic reviews (Table 1). Press releases had the longest sentences than all other formats (Table 1). All formats had high SMOG index, meaning that all formats required more than 14 years of education to be easily understandable. SMOG index for PLS was significantly lower than for other formats (Table 1). German PLS translations had significantly more sentences that other translations, and French PLS had the longest sentences (Table 1). SMOG index for French PLS was significantly higher than for German and Croatian PLS, with Croatian PLS having the lowest SMOG index among all PLS (Table 1). In tone and style analysis, press releases different from other formats in having higher scores on "joy", "agreeable"(symphatetic, cooperative) and "extraversion" tone dimensions. They also showed more positive sentiment than the other formats, especially compared the scientific abstracts and PLS, which had similar characteristics except the frequency of number use.

Conclusion: Summary information formats for Cochrane systematic reviews have low readability and language characteristics, including the formats directed to the lay public in different languages. Systematic approach to the content and format is needed to ensure that they are suitable for target audiences.

Table 1. Readability characteristics (median, 95% confidence interval) of different summary information formats for Cochrane systematic reviews and corresponding translations of plain language summaries (PLS)

Formats of summary information	A – Press release (n=162)	B – Cochrane Clinical Answers (n=35)	C – Scientific abstract (N=158)	D – PLS (n=156)	
Word count	407.5 (388.1-425.9)[BCD]	178 (143.0-208.5)[ACD]	555.5 (495.6-600.8)[ABD]	334.5 (286.0-363.4)[ABC]	P<0.001
Sentence count	17.0 (16.0-18.0)[BC]	8.0 (7.0-10.0)[ACD]	26.0 (24.0-28.0)[ABD]	17.0 (15.0-19.0)[BC]	P<0.001
Words per sentence	23.6 (23.1-24.0)[BCD]	20.4 (15.8-21.1)[AC]	20.8 (20.3-21.4)[ABD]	18.3 (17.7-19.1)[AC]	P<0.001
Syllables per word	1.8 (1.8-1.8)[BCD]	2 (1.9-2.0)[ACD]	1.9 (1.9-1.9)[ABD]	1.8 (1.8-1.8)[ABC]	P<0.001
SMOG index	15.4 (15.1-15.5)[CD]	15.2 (14.8-16.6)[D]	15.6 (15.3-15.9)[AD]	14.7 (14.4-15.0)[ABC]	P<0.001
PLS translations	**E – English (n=156)**	**F – German (n=41)**	**G – French (n=101)**	**H – Croatian (n=156)†**	
Sentence count	17.0 (15.0-19.0)[F]	22.0 (19.5-25.0)[EGH]	15.0 (13.0-17.0)[F]	17.0 (15.0-19.0)[F]	P=0.007
Words per sentence	18.3 (17.7-19.1)[G]	17.9 (16.9-18.7)[G]	21.7 (20.9-22.7)[EFH]	18.1 (17.5-19.0)[G]	P<0.001
Syllables per word	1.8 (1.8-1.8)[FGH]	2.1 (2.1-2.2)[EGH]	1.8 (1.8-1.8)[EFH]	2.5 (2.5-2.5)[EFG]	P<0.001
SMOG index	14.7 (14.4-15.0)[FGH]	12.0 (11.7-12.3)[EGH]	15.3 (14.8-15-5)[EFH]	10.3 (9.9-10.3)[EFG]	P<0.001

* Kruskal Wallis non-parametric test and *post-hoc* Conover Iman test. Superscript letter(s) indicates significant difference from relevant study groups designated with the same letter.

†SMOG index for Croatian language was calculated according to the formula adapted to the Croatian language (Brangan S. Development of SMOG-Cro readability formula for healthcare communication and patient education. Coll Antropol. 2015;39:11-20).

Survey study: assesment of oral health knowledge in adolescents in Tešanj municipality (Bosnia and Herzegovina)

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Background: Good oral hygiene is one the most important things for oral health (OH). A good knowledge about OH is essential for OH related behavior. OH educational intervention has been successful in many developing and developed nations. In order to plan successful OH it is essential to evaluate knowledge about oral hygiene. Cochrane systematic reviews (CSRs) offer unbiased high-quality evidence on effectiveness of treatments that can be used to assess knowledge on the effectiveness of OH practices in adolescents.

Objectives: Asses knowledge concerning OH of adolescents in Tešanj municipality in a middle income country (Bosnia and Herzegovina).

Methods: CSRs produced by the Cochrane Oral health group were searched for in order to find CSRs on the most effective practices in obtaining and maintaining good OH. For this study we have developed an 11-item questionnaire based on the evidence from 5 CSRs (clear evidence on effectiveness) and have administered it to adolescents (34 first year of secondary school, and 99 final year of primary school students). Questionnaire consisted of personal information (age, sex, school), attitudes on the use of fluoride toothpastes for preventing dental caries, on the efficacy of power-electric toothbrushes and on the efficacy of dental flossing in/for reducing gum disease.

Results: Average age of the participants was 13.2 years. Overall 65 males and 68 females participated in the study of which 88 participants (66%) were aware that brushing with fluoride toothpaste at least once daily decreases the frequency of caries occurrence, 61 participants (46%) were aware that power-electric toothbrushes were more efficient than other toothbrushes, 59 (44%) were aware that regular flossing reduces gum disease, and 40 (30%) were aware that use of triclosan-copolimer-containing toothpastes could reduce frequency of dental caries.

Conclusions: Adolescents were more aware of the importance of tooth brushing with fluoride toothpastes at least one daily than in some high and middle income countries (Saudi Arabia and Bangladesh), but further actions are needed to raise awareness on oral health, especially flossing, use of fluoride mouth rinses and electric toothbrushes in adolescents in Tešanj municipality (Bosnia and Herzegovina).

Is alcohol perceived as a risk factor for cancer? A systematic review of survey studies

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Background: According to the WHO, general population still does not recognize the role alcohol consumption plays in the development of cancer. This jeopardises efforts to reduce the risk of types of cancers known to be causally related to alcohol consumption.

Objective: This systematic review was designed to critically assess surveys which monitor the perceptions of and beliefs in general population and cancer patients about alcohol as a risk factor for any type of cancer.

Method: General methods of conducting systematic reviews described in Cochrane Handbook were followed. MEDLINE, CINAHL and PsycInfo databases were searched for articles published between 01 January 2003 and December 2016. Only surveys which examined the beliefs and/or perceptions of alcohol use and risk of cancer in any type of cancer patients or the general population and providing quantitative data were included. The quality of surveys was assessed taking into account: an employment a random sampling method; a response rate in excess of 70%, a sample size greater than or equal to 1000.

Results: Sixty-six surveys were included. Of those, 51 surveys involved 297,127 healthy individuals; 16 surveys involved 10,461 cancer patients (one survey involved the mixture of both). Across surveys on general population, the average proportion of population perceiving alcohol as a risk factor for cancer was 42% (95% CI 31-52; I2= 100%). Across surveys on cancer patients, the average risk perception of alcohol as a risk factor for the disease was 26% (95% CI 16-37; I2= 99.2%).

Conclusions: Vast proportions of the general population, as well cancer patients, are unaware of the cancer-related risks of alcohol use. Health promotion and disease prevention campaigns should therefore be targeting these populations to increase knowledge of cancer related risks. Alongside strong policy action on alcohol, efforts to encourage individuals to reduce their use of alcohol need to be re-doubled in order to tackle rising cancer morbidity and mortality. Significant statistical heterogeneity of the pooled data, no validation of quality assessment tool, various sample sizes and moderate quality of surveys render cautions interpretation of our results.

Comparison of quality of studies published as systematic reviews and meta-analyses in Polish internal medicine and surgical journals with IF in 2011 and 2016.

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Background: Previous studies showed unsatisfactory quality of published systematic reviews (SR) and meta-analyses (MA). Thomson Reuters Master Journal List (TRMJL) contains journals assigned Journal Citation Reports Impact Factor, i.e. of higher quality. No research on quality of SR and MA published in Polish journals figuring on this list has yet been reported.

Objectives: To assess the quality of studies published as SR or MA in Polish journals listed on 2016 TRMJL within the field of internal medicine and surgery and to compare it to the quality of such studies published in journals listed in 2011.

Methods: We identified Polish journals in the field of surgery and internal medicine and searched comprehensively for studies published as SR or MA. The quality of each SR and MA was scored by two authors independently using the AMSTAR checklist (total score from 0 to 11).

Results: We identified 101 papers (24-2011; 77-2016). After de-duplication and applying of exclusion criteria, we assessed the quality of 35 included articles (9-2011; 26-2016). Mean AMSTAR score was approx. 25% higher in 2016 than in 2011 (3.73 vs 3.0, p=0.171). The weakest item (most frequently scoring 0) was "conflict of interest (COI) statements" in 2016, while in 2011 - items related to: "using the quality of primary studies in formulating conclusions" and "COI statements". The largest improvement in 2016 as compared to 2011 was observed in the item "combining the findings of studies" (73% vs 33%, p=0.097). The most similar results were in the item "inclusion of studies on the basis of publication status" (12% vs 11%, p=0.828). Frequency of citing Cochrane Handbook as a methodological guide in methods section was similar between 2016 and 2011 (23% vs 22%, p=0.958).

Conclusions: The quality of studies published as SR and MA in 2016, although improved as compared to those published in 2011, was unsatisfactory. Therefore methodological quality of such studies requires more attention of journal editors and peer reviewers.

Presenting summary information from Cochrane systematic reviews: randomized controlled trial of infographics vs. standard text-based summaries

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Trial registration: NCT02918656 (student trial), NCT02980107 (consumer trial), NCT03002610 (physician trial)

Background: Consumers often have problems understanding the standard presentation of research findings. Cochrane is engaged in developing infographics to complement plain language summaries (PLS) and scientific abstracts of systematic reviews.

Objectives: To test the effectiveness of infographics in the understanding of health information to lay and professional populations in comparison to PLS and scientific abstracts.

Methods: We conducted three randomized trials, with university students, consumers and physicians, to examine the effect of different summary formats of a Cochrane systematic review[1] summary on understanding of health information, reading experience and perceived user-friendliness. In the trials involving students and physicians, we compared infographics with PLS and scientific abstract.

Results: In the student sample, the group that read the scientific summary had the lowest scores on all measures, with no difference between PLS and infographics groups (Table 1). Similarly, no difference was found in comprehension test scores between PLS and infographics in the consumer sample, although infographic was superior to PLS in terms of reading experience and user-friendliness (Table 1). In the physicians' sample, no difference in understanding was found between the three formats (Table 1). Physicians had better understanding than the other two groups for PLS and scientific abstract, and rated reading experience and user-friendliness of scientific abstracts higher than students (Table 1).

Conclusions: Although the infographic format was perceived as more enjoyable for reading and more user-friendly, we found no evidence that it was better in information transfer than traditional PLS for non-professional populations. Health professionals were able to understand all summary formats equally.

[1]Hofmeyr GJ, Kulier R, West HM. External cephalic version for breech presentation at term. Cochrane Database Syst Rev. 2015;(4):CD000083.

Table 1. Participants' scores on understanding information, reading experience and user-friendliness of three summary information formats of a Cochrane systematic review[*]

		Presentation format (median, 95% CI)			P[†]
		Infographic	**PLS**	**SA**	
Trial 1: Students	**N=171**	**n=54**	**n=60**	**n=57**	
	Understanding	6 (5.0-7.0)	6 (5.1-6.0)	5 (4.0-5.0)‡	<0.001
	Reading experience	31 (27.8-33.0)	30 (26.1-32.0)	16 (14.3-18.0)‡	<0.001
	User-friendliness	32.5 (30.0-34.5)	32.5 (31.0-35.0)	19.5 (17.0-21.0)‡	<0.001
Trial 2: Consumers	**N=99**	**n=45**	**n=54**		
	Understanding	7.0 (6.0-7.0)	7.0 (6.0-7.0)		0.511
	Reading experience	33.0 (28.0-36.0)	22.5 (19.0-27.4)§		<0.001
	User-friendliness	30.0 (25.5-34.5)	21.0 (19.0-25.0)		<0.001
Trial 3: Doctors	**N=64**	**n= 25**	**n=18**	**n=21**	
	Understanding	8.0 (6.0-8.0)	8.0 (7.0-9.0)‖	8.0 (5.9-9.0)‖	0.611
	Reading experience	37.0 (26.8-41.3)	32.0 (30.0-39.9)	24.0 (21.3-31.8)‖	0.002
	User-friendliness	36.0 (30.9-40.0)	29.0 (26.8-36.2)	25.0 (23.5-27.2)‖	0.003

PLS – Plain language summary, SA – Scientific abstract, CI – 95% confidence interval

*Results are expressed as test scores for understanding of information (10 questions, maximum score 10), reading experience and user-friendliness scales (5 questions each, with a Likert scale ranging from 0 to 10, maximum score 50).

†Kruskal Wallis test (students and doctors) and Mann Whitney U test (consumers).

‡P<0.05 vs other two format groups, Conover-Iman *post-hoc* test.

§P<0.05 vs doctors and consumers for PLS (Kruskal Wallis test with Conover-Iman *post-hoc* test).

‖P<0.05 vs students for SA (Mann Whitney U test) or vs students and consumers for two other formats (Kruskal Wallis test with Conover-Iman *post-hoc* test).

Assessment of cytotoxic and genotoxic effects of regular and whitening kinds of toothpaste on oral mucosa cells: a non-randomized crossover study

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Background: Due to the growing aesthetic demands of modern society, the use of tooth whitening products has increased, highlighting a need for healthcare clinicians and consumers alike to be informed of the potential benefits and risks associated with these products.

Objective: This study aimed to evaluate possible DNA damage to oral epithelial cells exposed to whitening kinds of toothpaste considering the effect of conventional non-whitening kind of toothpastes.

Materials and methods: Sixty volunteers were found among students of dental medicine and assigned into three experimental groups. Each group used a regular toothpaste for initial two months, followed by the use of whitening kinds of toothpaste of the same brand for the next two months. The oral epithelial cells were sampled at baseline and 30, 60, 90 and 120 days after the beginning of the use of tested types of toothpaste. Chromosomal damage was analyzed by micronucleus assay.

Results: For all tested whitening kinds of toothpaste moderate non-significant increase in the number of cells bearing micronuclei was recorded following 30 days of their use compared to referent values, and those obtained after usage of regular non-whitening ones. For just one whitening toothpaste was observed significantly increase in the number of micronucleated cells after 60 days of use compared to control swab (3.1 ± 1.59 and 1.6 ± 0.07, respectively; $p=0.025$), and values obtained after 30 and 60 days of usage of conventional non-whitening toothpaste (1.7 ± 0.48 and 2.5 ± 1.35; $p=0.042$ and $p=0.044$, respectively). There was no statistically significant difference in other micronucleus assay endpoints between tested types of toothpaste at either of the sampling times during the period of toothpaste application.

Conclusion: Based on the results, we can conclude that the use of certain whitening kinds of toothpaste may cause limited, biologically insignificant genotoxic effect on buccal epithelial cells.