

# Analysis of the impact of education level on the sense of coherence and opinion concerning carrying out preventive vaccination

Marta Makara-Studzińska<sup>1</sup>, Katarzyna Sidor<sup>1</sup>, Paweł Kalinowski<sup>2</sup>

<sup>1</sup> Department of Applied Psychology, Medical University of Lublin, Poland

<sup>2</sup> Independent Epidemiology Unit, Medical University of Lublin, Poland

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## Abstract

**Introduction.** Nowadays, preventive vaccination is still the most effective method of countering and combating infectious diseases.

**Objective.** The objective of the present study was to take into consideration the education of the respondents while learning about their views and attitudes towards both compulsory and recommended preventive vaccination in Poland.

**Materials and methods.** An interview survey was conducted among 370 respondents – students and young parents residing in the Lublin province of eastern Poland. The research tools were an authors' questionnaire and a Life Orientation Questionnaire (SOS-29).

**Results.** The majority of respondents with secondary education (77.40%), undergraduate education (63.71%), and graduate education (55.07%) stated that sometimes preventive vaccination may have life-threatening consequences. A very small percentage of both groups of respondents with secondary and undergraduate education expressed the opinion that such situations often happen (1.69% vs. 1.61%), but this opinion was not shared by any of the respondents with graduate education. Analyzing the dependency between the sense of coherence and one's level of education, a significant difference between the respondents with secondary education and undergraduate education was observed. Although differences between respondents with graduate education and respondents with undergraduate education existed, they were not very significant.

**Conclusions.** The educational background of the respondents has an impact on their opinions on preventive vaccination. The great majority of respondents believed that vaccination is necessary in order to avoid many dangerous diseases. Respondents with graduate education evaluated preventive vaccination in a positive or a very positive way. The subjects differed in their global sense of coherence together with its components. The general sense of coherence stood at an average level, with the mean of 129.02 points. The highest results were obtained by the respondents in the area of resourcefulness, which is a belief that they had at their disposal remedial resources, including preventive vaccination.

## Key words

preventive vaccinations, infectious diseases, coherence

## INTRODUCTION

The study presents the concept of Aron Antonovsky in which the main assumption was in convincing a person of comprehensibility, manageability and meaningfulness. According to Antonovsky, seeing the world as being predictable, organized or meaningful affects human health-conscious behaviours. Undoubtedly, preventive vaccinations are a sign of health-conscious human behaviour and constitute one of the most effective forms of disease prevention. They are one of the key components of disease prevention and are now the most effective means to counter and combat infectious diseases.

Antonovsky defines the sense of coherence as a global, complex human orientation that expresses the degree of a general belief that the information originating from a man from the outside world is structured, predictable and understandable; it is a belief that the world's available resources, as well as in the man himself, that allow him

to meet the demands of life together with the demands of the external world are worth taking action and becoming involved in [1].

Thus, the sense of coherence consists of three basic components: the sense of comprehensibility, manageability and meaningfulness. Comprehensibility refers to cognitive functions and is a measure of the perception of received information which is structured and can be comprehended. Resourcefulness is an expression of the belief in the ability to cope with the problems of everyday life, it is an active influence on situations and the use of life experience in order to overcome crisis situations. According to Antonovsky, reasonableness is a direct indicator of the will to live, a measure of the ability of a person to appropriate experiencing different events, with a tendency to understand and experiencing them in terms of challenges rather than in terms of threats. Antonovsky believes that a man having a high sense of resourcefulness and comprehensibility who uses his life experience and adequate resources can one day stop comprehending the world around him and lose control over his resources if he does not have an adequately high sense of reasonableness, that is motivation to act [2]. The sense of coherence has been included as a variable in numerous

Address for correspondence: Katarzyna Sidor, Department of Applied Psychology, Medical University of Lublin, Chodźki 15 (Hala Sportowa), 20-093 Lublin, Poland  
E-mail: psychologia.stosowana@umlub.pl

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studies and most frequently the results confirmed its key role for health [3, 4].

Protective vaccinations, on the other hand, have a direct impact on preventing diseases, thereby maintaining optimal health.

The introduction of common and compulsory preventive vaccinations helped to significantly reduce the incidence of diphtheria, tetanus and hepatitis B. In addition, preventive vaccinations enabled the eradication of smallpox and poliomyelitis [5]. In Poland, preventive vaccinations are carried out in accordance with an applicable Vaccination Programme (known as the Vaccination Calendar) which is updated annually and published in the Official Journal of the Minister of Health [6].

Vaccination programmes are structured in a certain way, and their structure is determined by the epidemiological situation of the country. Their purpose is to protect the entire population against diseases, both individuals who were vaccinated, as well as those non-vaccinated [7].

## OBJECTIVE

The objective of the study was to determine the impact of one's education on the sense of coherence, and also to learn about the attitudes and views of young people concerning both mandatory and recommended protective vaccinations in Poland.

## MATERIALS AND METHOD

The study was conducted among 370 people, students of universities in the city of Lublin and young parents living in the Lublin province of eastern Poland. The subjects were divided into three groups, the first of them were people with secondary education (n=177), the second were people with undergraduate education (n=124), and the last group consisted of people with graduate education (n=69). The research tool was an authors' interview survey consisting of close-ended questions, the Life Orientation Questionnaire (SOS-29), and for the statistical analysis of the study's results, methods of descriptive statistics and the Chi<sup>2</sup> test were used. The results obtained during the survey with the use of Life Orientation Questionnaire (SOS-29) are shown in Table 1.

As shown in Table 1, the test group were people with an average sense of coherence (129.02), with the tendency bringing the results to a low level. By analyzing dependencies between the sense of coherence and level of education, a significant, almost ten-point difference between the subjects with secondary education and those with undergraduate education could be observed, while differences existed between respondents with graduate vs. undergraduate education but were not very significant. Similarly, there were differences in the sense of comprehensibility (41.11; 44.87; 45.37) and resourcefulness; in this case, the results also increased, depending on respondents' level of education (advancing) from 43.53 at the level of respondents with secondary education to 49.04 at graduate education level. The sense of reasonableness in all the respondents was very similar, at a level of 39.92, on average.

Subsequently, the respondent were asked about their opinions on preventive vaccinations.

**Table 1.** Sense of coherence and its components with respect to education

Education	Statistics	Sense of under-standing	Sense of Resource-fulness	Sense of reason-ableness	Sense of coherence
		Level of significance	Chi <sup>2</sup> =18.69 p=0.000	Chi <sup>2</sup> =30.70 p=0.000	Chi <sup>2</sup> =11.82 p=0.002
Secondary	Mean	41.11	43.53	39.03	123.68
	Number	177	177	177	177
	Stand. dev.	6.51	6.87	5.23	13.10
Undergraduate	Mean	44.87	47.61	40.85	133.34
	Number	124	124	124	124
	Stand. dev.	6.22	7.50	5.04	13.64
Graduate	Mean	45.37	49.04	40.55	134.97
	Number	69	69	69	69
	Stand. dev.	8.77	8.72	6.25	18.48
Total	Mean	43.17	45.92	39.92	129.02
	Number	370	370	370	370
	Stand. dev.	7.16	7.78	5.43	15.27

That preventive vaccinations as necessary in order to avoid many life-threatening diseases were recognized by more than 65% of respondents with secondary education, and the great majority of over 73% of respondents from groups with undergraduate and graduate education (Tab. 2). The opinion that vaccinations are needed but their role today is not as big as it used to be, was expressed by more than 30% of people with secondary education, over 23% of respondents with undergraduate education, and 12% with graduate education. More than 3% of the respondents with secondary education admitted that with the current achievements in medicine, preventive vaccinations can be abandoned. This opinion was shared by two respondents from the group of people with undergraduate education and by more than 13% of the respondents with graduate education. In the opinions of two people with undergraduate education, one with undergraduate education, and one with graduate education, preventive vaccinations are actually harmful to health. Statistical analysis showed a statistically significant dependency between level of education and opinions about preventive vaccinations (p = 0.000).

**Table 2.** Respondents' opinions about preventive vaccinations

What is your opinion on preventive vaccinations:	Education					
	Secondary		Undergraduate		Graduate	
	N	%	N	%	N	%
necessary to avoid many life-threatening diseases	116	65.54%	91	73.39%	51	73.91%
they are needed but their role is not as important as in the past	54	30.51%	29	23.39%	8	11.59%
with the current advances in medicine they are not needed	6	3.39%	2	1.61%	9	13.04%
they are hazardous to health	1	0.56%	2	1.61%	1	1.45%
<b>Total</b>	<b>177</b>	<b>100%</b>	<b>124</b>	<b>100%</b>	<b>69</b>	<b>100%</b>

Chi<sup>2</sup>=22.72. p=0.000

Subsequently, the respondent were asked about their opinions on the effects of preventive vaccinations (Tab. 3).

**Table 3.** Respondents' opinions on the effects of preventive vaccinations

Do you think that the effects of vaccinations can be:	Education					
	Secondary		Undergraduate		Graduate	
	N	%	N	%	N	%
only positive – by preventing diseases	36	20.34%	23	18%	34	49.28%
more positive than negative – they prevent diseases while carrying a very low risk of complications	128	72.32%	83	66.94%	35	50.72%
equally positive and negative – they prevent diseases but may cause post-vaccination complications	12	6.78%	17	13.71%	0	0.00%
only negative – they have a very high risk of complications while chances of falling with a infectious disease are low	1	0.56%	1	0.81%	0	0.00%
Total	117	100.0%	124	100.0%	69	100%
	Chi <sup>2</sup> =34.89, p=0.000					

Most often, the respondents chose the answer that the effect of preventive vaccinations can be more positive than negative – they prevent diseases and involve a very low risk of complications. More than 72% of people with secondary education, almost 67% of respondents with undergraduate education, and more than a half of the respondents with graduate education, considered that the effect of vaccinations may be more positive than negative. The rest of the respondents with graduate education believed that the effect may be only of a positive nature – by preventing diseases (49.28%), while among those with secondary education, the percentage of answers was 20.34%, and in case of respondents with undergraduate education – 18%. Over 13% of respondents with undergraduate education expressed the opinion that the effect may be both positive and negative – vaccines prevent diseases but sometimes can cause post-vaccination complications. In the group of people with secondary education, 7% of respondents chose this answer, and no respondent with graduate education confirmed the above-mentioned opinion. None of the respondents with graduate education identified the effects of vaccinations as negative, while among those with secondary and undergraduate education, such a response was provided by one person in each of the groups. Statistical analysis showed a statistically significant dependency between level of education and opinions on preventive vaccinations ( $p = 0.000$ ).

Another aspect of the study was to learn about the opinion of the study group on serious consequences of preventive vaccinations (Tab. 4).

Most of the respondents with secondary education (77.40%), undergraduate education (63.71%) and graduate education (55.07%) stated that sometimes such instances happen. Definitely more respondents with a Master's Degree (44.93%) than respondents with a Bachelor's Degree (36.68%), or with secondary education (20.90%), considered that there is no such possibility that vaccination can cause severe consequences. A small percentage of both groups of respondents with secondary and undergraduate education expressed the opinion that such situations occur frequently (1.69% vs. 1.61%); this opinion was not shared by any of the respondents with graduate education. A statistically

**Table 4.** Respondents' opinions on harmful consequences of preventive vaccinations

Do you think that vaccinating your child may cause life-threatening complications?	Education					
	Secondary		Undergraduate		Graduate	
	N	%	N	%	N	%
not possible	37	20.90%	43	36.68%	31	44.93%
it may happen	137	77.40%	79	63.71%	38	55.07%
it happens often	3	1.69%	2	1.61%	0	0.00%
Total	177	100%	124	100%	69	100%
	Chi <sup>2</sup> =16.32, p=0.002					

significant dependency between level of education and opinions of the study group was observed on the dangerous consequences of vaccination ( $p = 0.002$ ).

At the end of the study, the respondents were asked to express their overall assessment of preventive vaccinations by selecting one of the following criteria: very positive, positive, neutral, and negative (Tab. 5).

**Table 5.** Respondents' general assessment of preventive vaccinations

Your general opinion on preventive vaccinations is:	Education					
	Secondary		Undergraduate		Graduate	
	N	%	N	%	N	%
very positive – vaccines eliminate many life-threatening diseases	34	19.21%	30	24.19%	30	43.48%
positive – vaccines eliminate many life-threatening diseases while carrying a very low risk of complications	126	71.19%	82	66.13%	39	56.52%
neutral – although they eliminate dangerous diseases, vaccines carry a high risk of complications; moreover the diseases which are eliminated by vaccinations are very rare nowadays	17	9.60%	12	9.68%	0	0.00%
negative – there are more patients who develop post-vaccination complications than there are those suffering from the diseases the vaccines are meant to prevent	0	0.00%	0	0.00%	0	0.00%
Total	177	100.0%	124	100.0%	69	100%
	Chi <sup>2</sup> =19.87, p=0.000					

The majority of respondents with secondary education (71.19%), undergraduate education (66.13%) and graduate education (56.52%), rated the role of preventive vaccinations as positive because they eliminate many life-threatening diseases with a very low risk of complications. 56.52% of respondents with graduate education, 66.13% of respondents with undergraduate education and 19.21% of respondents with secondary education, rated vaccinations as very positive. 9.60% of the respondents with secondary education, 9.68% of respondents with undergraduate education, and no respondent with graduate education, stated that preventive vaccinations are neutral. No respondent assessed the role of preventive vaccination as negative. A statistically significant dependency was observed between the level of education and assessments of the respondents regarding preventive vaccinations ( $p=0.000$ ).



## DISCUSSION

Infectious diseases are a major medical and social problem in today's society. Although the advances in epidemiology and treatment helped decrease the mortality rate associated with these diseases, outpatient visits and hospitalizations remain a steadily growing burden for society [8]. Poor knowledge on the positive effects of vaccinations on health, as well as excessive concerns about the potential harmful side effects, can lead to parents avoiding reporting their children for compulsory vaccinations [9]. Results of a survey by Rudzińska and Kochman showed that the level of the mother's education played an important role in her decision about recommended vaccinations. The higher the mother's education, the greater the chance of subjecting her child to additional vaccinations which give a fuller protection against diseases [10]. This means that the mother's opinion on vaccinations is more likely to be more positive than negative. Other authors made similar observations [11]. The authors of the presented study confirmed the findings of Rogalska et al., showing that the level of knowledge on vaccination was higher among those with a university degree, compared with respondents with primary or vocational education [12].

In a communication on research [13] published by the Centre for Public Opinion Research (CBOS) concerning opinions on preventive vaccinations for children, one reads that Poles generally have a favourable attitude towards the vaccination of children, and according to the majority of respondents (79%), artificial immunization results in more good than harm. In addition, the prevailing view among respondents is that thanks to vaccination programmes, many serious diseases have currently almost ceased to exist (82%), and that this form of prevention is the most effective against serious diseases (79%). The less educated are more frequently in favour of complete legal freedom with respect to child immunization; this position is expressed by almost one-third of respondents with primary education (31%) and only one in six with a university degree (17%). Unfortunately, according to a report by the National Institute of Hygiene [14], between 2009 – 2012, there was a significant increase in the number of people evading compulsory vaccinations.

Research by the authors of the current study has established that the respondents' education positively correlated with their state of knowledge about immunization. Similar results were obtained by authors examining the state of knowledge on coronary syndrome [15], as well as those researching knowledge about chronic venous insufficiency [16].

## CONCLUSIONS

1. Education level was found to influence respondents' opinions about preventive vaccinations, with the majority deeming them necessary to avoid many harmful diseases, and with 13% of the surveyed with graduate education feeling that with the latest advances in medicine they are not essential.
2. Respondents with a Master's Degree viewed preventive vaccinations as positive or very positive, while approximately 10% in the remaining groups assessed

vaccination neutrally, admitting that despite eliminating some serious diseases, they involve a greater risk of complications, and that the diseases they help eliminate have become very rare nowadays.

3. Among the respondents with secondary and undergraduate education, there were opinions on preventive vaccinations which compared their positive and negative effects or only the negative effects, whereas the holders of Master's Degree were not of the opinion that vaccinations prevent diseases, but may sometimes involve the risk of complications, and may also involve a too high a risk of complications and a lesser chance of falling ill with an infectious disease.
4. The respondents differed in both the global sense of coherence as well as its components. The general sense of coherence stood at an average level, with the mean of 129.02 points.
5. The highest results were obtained by respondents in the area of the sense of resourcefulness, which is the belief that there are certain remedy resources available to man, including such solutions as vaccinations.

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