

ORIGINAL ARTICLE

Performance indicators collected from primary health centres included in organised cervical cancer screening programme in the Republic of Serbia

Tamara Naumovic¹, Verica Jovanovic¹, Dragan Ilic¹, Uros Rakic¹, Damjan Mirkov², Zivko Perisic³

¹Institute of Public Health of Serbia "Dr Milan Jovanovic Batut", Belgrade; ²Medical School, University of Belgrade, Belgrade;

³Gynecology and Obstetrics Clinic "Narodni front", Belgrade, Medical School, University of Belgrade, Belgrade, Serbia

Summary

Purpose: To present the performance indicators for monitoring the cervical cancer screening process conducted in primary health centres (PHCs) and to identify any shortcomings in the implementation of the Organized Cervical Cancer Screening Programme (OCCSP).

Methods: This study included 16 PHCs participating in the OCCSP in the Republic of Serbia. The data were analysed from the moment the methodology in the PHCs has been accurately and consistently applied in accordance with the European guidelines (earliest from 20th December 2012 until 30th November 2014). We constructed "the standardised" model (adjusted on the number of working months). Performance indicators analysed in this study were: coverage by invitation, coverage by examination, and compliance with invitation.

Results: According to "the standardised" model, coverage by invitation was 61.9%, coverage by examination was 35.5% and compliance to invitation was 57.3%.

Conclusion: Social mobilization, education, effective promotion strategies and training about cervical cancer screening program-especially in women of target population-as well as better coordination and planning of capacity-building, and staff resources in PHCs, are needed in the future in order to obtain higher values for our performance indicators. Screening registration will provide additional information about demographic characteristics of the tested women.

Key words: performance indicators, primary health centers, organized cervical cancer screening, program

Introduction

From the 1960s up until the introduction of the Regulation on the National programme for early detection of cervical cancer, the type of screening conducted in Serbia was opportunistic [1]. The previously established National programme [2,3], the results and experience drawn from the projects carried out in the Republic of Serbia [4-6], have all helped towards the development and implementation of the cervical cancer screening programme. This program has been introduced in accordance with the last Regulation (from August 2013) [7], as an organised, decentralised programme for all women in Serbia

aged between 25-65 years. Women invited by the screening programme have their screening test at a PHC. The screening test was Papanicolaou smear test.

In Europe, organised cervical cancer screening programmes existing in several countries are performed mostly once every 3 or 5 years [8]. In the Republic of Serbia, the screening interval is 3 years.

A high coverage and compliance on invitation are some of the main determinants of the success of any organised cancer screening programme (and therefore also of an organised cervical can-

Table 1. Performance indicators for monitoring the organised screening programme for the “standardised” model-formulas

<i>Performance indicator</i>	<i>Numerator</i>	<i>Denominator</i>
Coverage invitation	Total number of eligible women invited to participate in the organised screening programme	The number of women of the target population* divided by 36 months and multiplied with the number of months during which the screening was conducted in compliance with the guidelines
Coverage examination	Total number of eligible women screened within the screening interval	The number of women of the target population* divided by 36 months and multiplied with the number of months during which the screening was conducted in compliance with the guidelines
Compliance invitation	Total number of eligible women screened within the screening interval	The total number of eligible women invited to participate in the organised screening programme

*estimated by 2011 Census

cer screening) both in developed and developing countries that introduce these programmes [9,10].

According to a study from 2009 that compared the conducting of screening for cervical cancer in several European countries, the highest coverage was in the Netherlands (77%), the United Kingdom (74%) and Finland (70%) [9].

As for the countries in the region that conduct organised screening programmes, the coverage measured over a 3-year period in Slovenia was around 50% [11], while the compliance with invitation in Croatia was 35.2% in 2007, and 46.5% in 2008, during a pilot programme [12].

The aim of this study was to present the performance indicators for monitoring the cervical cancer screening process conducted in selected PHCs, and to identify any shortcomings in the implementation of the OCCSP so far.

Methods

This study included 16 out of 17 PHCs participating in the OCCSP in the Republic of Serbia. The first of the PHCs selected to conduct the organised screening entered the programme on 20th December 2012; the last in July 2014. The data acquired from the selected PHCs are deemed eligible for analysis from the moment the methodology of sampling (with spatula and endocervical brush), and Pap smear preparation, have been accurately and consistently applied in PHCs in accordance with the European guidelines for quality assurance in cervical cancer screening [13]. This constituted the criterion for inclusion of PHCs in the study. The PHCs that complied with the aforementioned requirements were monitored until 30th November 2014. The data obtained from one PHC that failed to fulfil the requirements were excluded from the analysis.

The relevant weekly collected data acquired from the selected PHCs were forwarded to the regional public health institutes to be processed, entered into the

standard request form and forwarded further, monthly, to the National Cancer Screening Office (NCSO) [14].

The indicators were calculated according to the formula presented in Table 1.

Seeing that the date of entering the OCCSP was not the same for each PHC, plus selected PHCs went through ‘a period of accommodation’, defined as the period of time for a PHC to adjust the methodology of sampling to the standards presented in the European guidelines for quality assurance in cervical cancer screening [13], we constructed the “standardised” model. In this model, the number of women of the target population for each of the selected PHCs (for each municipality that organised screening), estimated by the 2011 Census, was distributed across the whole cycle of 36 months, and selected to be used as the base value. The result value from the distribution of the target population of a municipality across the period of 36 months constituted the monthly quota for each PHC. The numerical value of the quota was multiplied by the number of months during which a PHC has conducted screening in compliance with the guidelines for quality assurance. This way we have made the plan for each PHC according to their respective Census populations, making all PHCs comparable despite the differences in screening duration. Formulas for the performance indicators in the “standardised” model are shown in Table 1.

Variables that are used for providing the performance indicators are presented as absolute numbers (numerator and denominator). Performance indicators analysed in this study were: coverage by invitation, coverage by examination, and compliance with invitation, presented as relative numbers.

Results

Performance indicators for monitoring the OCCSP in Serbia are shown in Table 2.

According to the “standardised” model, coverage by invitation was 61.9%, coverage by examination was 35.5%, and compliance to invitation

Table 2. Performance indicators collected from primary health centres included in the organised cervical cancer screening programme in the republic of Serbia: “the standardised” model

Indicator	Numerator	Denominator*	Indicator (%)
Coverage by invitation	139846 ^a	227055 ^b	61.6
Coverage by examination	80130 ^c	227055 ^b	35.3
Compliance to invitation	80130 ^c	139846 ^a	57.3

^a number of invited women, ^b number of women in target population, ^c number of tested women

*adjusted on number of months during which a PHC has conducted screening in compliance with the guidelines for quality assurance

Table 3. Results of process indicators for each PHC included in the organized cervical cancer screening program in Serbia- the “standardised” model

PHC	Months	Coverage by invitation (%)	Coverage by examination (%)	Compliance to invitation (%)
Palilula (BG)	22	68.3	35.3	51.7
Vozdovac (BG)	23	41.9	24.3	58.1
Cukarica (BG)	23	42.6	29.4	69.2
Novi Sad	8	59.2	44.9	75.8
Zrenjanin	14	58.1	16.2	27.8
Novi Becej	14	103.8	28.6	27.6
Sremska Mitrovica	5	73.4	51.6	70.4
Pozarevac	23	72.2	34.7	48
Kragujevac	10	29.4	25.9	87.8
Arandjelovac	10	79.7	65.2	81.8
Krusevac	23	100.2	55.9	55.8
Trstenik	22	57.0	48.6	85.3
Uzice	10	97.7	51.1	52.3
Valjevo	10	94.4	20.5	21.7
Kraljevo	5	37.1	30.7	82.9
Pirot	10	94.08	47.3	50.3
Total	5-23	61.6	35.3	57.3

PHC: primary health centres, BG: Belgrade

was 57.3%.

Seeing the results of the “standardised” model, the greatest number of women were invited in the municipalities of Novi Becej (103.8%), Krusevac (100.2%) Uzice (97.7%) and Valjevo (94.4%) (Table 3).

According to the statistics used in “standardised” model, the highest coverage rates with PAP test were in the municipalities of Arandjelovac (65.2%), Krusevac (55.9%), and Sremska Mitrovica (51.6%) (Table 3).

In addition, the best results for compliance to invitation had PHC Kragujevac (87.8%), Trstenik (85.3%), and Kraljevo (82.9%). In Novi Becej compliance to invitation was 27.6%, and in the municipality of Valjevo compliance was 21.7% (Table 3).

Discussion

Bearing in mind that cervical cancer is a preventable disease, the achievement of the highest possible coverage and compliance with invitation among women invited for regular screening under an organised screening programme can contribute to a substantial decline in the number of cases or deaths from cervical cancer.

Our results showed that the total number of eligible women invited to participate in the organised screening programme was 139 846, which constituted 61.6% of the intended number of invitations for a working period of 2 years.

European countries with long-term programmes such as the United Kingdom, Finland

and the Netherlands, had the highest percentage of personally invited women per year (107%, 105%, and 102%, respectively) [8]. Similar results were obtained in some of our municipalities such as Novi Becej, Krusevac, and Uzice.

During the first 18 months of the organised screening programme, the 16 PHCs achieved coverage by examination of 35.3% of women, in accordance with the time of framework, which means 14.2% within the whole target population for the first 2 years.

Data from the Swedish study on cervical screening programme in 2000 showed that the proportion of smears taken within the organized programme varied between the different counties, from 3% in the city of Malmo to 62% in the rural county of Jamtland per year [15]. Our results showed a range from 16.2 to 65.2% for the coverage by examination.

Comparing the results in Italian municipalities, for coverage with screening test (PAP test) in 2000, in Genoa, Ragusa and Varese (53%) [8], the results were similar to our municipality of Uzice (51.1% of tested women for 10 months).

Results of the study conducted in Finland showed that participation in screening varies in urban/rural areas, 72.6% on average for the period 2011-2012 [16]. In 2012 the compliance rate in Poland was running around 24% [17]. The compliance/attendance rate measured over a 3 year period in Germany was 80% [18]. Our results showed that "compliance by examination" rates ranged from 21.7 to 87.8%, with lower values in the rural parts of the country. Low rates of coverage by examination are related to low values for compliance to invitation and the main reasons are incorrect or missing addresses of women who should be invited, no Health Insurance, previous examination on routine opportunistic screening, previous examination in private clinics, women' unwillingness to participate, or some other social

and cultural reasons which are common in some European countries [8,18].

The shortcomings of this study include short monitoring period and lack of precise socio-demographic information about the invited and tested women.

Conclusion

Performance indicators vary between PHCs with various problems – low coverage in some centers and low compliance in others, due to specific causes.

With the implementation of the population register and its connection to geographic information system, which will provide correct addresses and precise location of target population, the total value for the indicator "coverage by invitation" could be higher; and with screening register we will have additional information about demographic characteristics of the invited and tested women. Also, better coordination and planning of capacity-building, especially staff resources in health centers, is needed in the future.

Increase in "coverage by examination" and "compliance to invitation" rates within the target population could be achieved by developing and implementing social mobilization, public education, effective promotion strategies and training about cervical cancer screening program, especially to the women of target population.

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