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Are Local Governments Ready for Cancer Prevention? Perceived institutional capacity of Polish Local Government Units

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Abstract

Background: Local governments play an important role in implementing population-level cancer prevention, but their ability to perform these tasks depends on available institutional resources and organizational capacity. This study assessed the perceived institutional capacity of Polish local government units (LGUs) to perform tasks related to cancer prevention and examined variation according to LGU type, population size, and voivodeship.

Methods: A quantitative cross-sectional study was conducted among 407 LGUs representing all 16 Polish voivodeships. Invitations containing a link to an electronic questionnaire were sent to the official email addresses of LGUs, and participating units forwarded the questionnaire to a staff member with sufficient knowledge of the institution's activities. Data were collected using Computer-Assisted Web Interviewing (CAWI). Perceived institutional capacity was assessed using 20 indicators covering human, financial, organizational, relational, analytical, technological, and evaluation-related

components. A composite capacity index was calculated as the arithmetic mean of the 20 items. Descriptive statistics, internal consistency analysis, exploratory factor analysis, between-group comparisons, Spearman's correlation, and multivariable linear regression with HC3 robust standard errors were used.

Results: The mean perceived institutional capacity score was 2.82 (SD = 0.80) on a 1–5 scale. Cooperation with educational institutions and healthcare providers received the most favorable assessments, whereas human resources, technological capacity, financing, locally tailored prevention programmes, and monitoring and evaluation were assessed less favorably. Internal consistency was high (Cronbach's $\alpha = 0.956$; McDonald's $\omega = 0.957$), and exploratory factor analysis indicated two interrelated dimensions. LGU type was associated with capacity, whereas population size and voivodeship were not independently associated with capacity in the multivariable model. The regression model explained 9.3% of the variance.

Conclusions: Polish LGUs reported substantial limitations in several components of perceived institutional capacity for cancer prevention. The findings indicate the need to strengthen workforce competencies, financial and analytical resources, implementation capacity, and systematic monitoring and evaluation. Because the study measures perceived rather than objectively verified perceived institutional capacity, the findings should not be interpreted as direct evidence of differences in actual prevention performance.

Keywords: Neoplasms; Local Government; Primary Prevention; Health Promotion; Public Health; Health Policy; Poland

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1. Introduction

Cancer remains one of the major public health challenges in Europe, generating substantial morbidity, premature mortality, and healthcare expenditure. Approximately 2.7 million people in the European Union were diagnosed with cancer in 2024 and around 1.3 million died from the disease [1]. At the same time, approximately 40% of cancer cases are considered potentially preventable through action addressing modifiable risk factors and other established determinants [2]. Prevention is therefore a central pillar of Europe's Beating Cancer Plan, requiring interventions in health promotion, risk-factor reduction, vaccination, environmental protection, and early detection [1].

The need to strengthen cancer prevention is particularly relevant in Poland. The EU Country Cancer Profile: Poland 2025 identifies cancer as a major population health challenge and highlights persistent exposure to behavioural and environmental risk factors alongside challenges in prevention and early detection [2]. These issues occur within a health system where the burden of preventable disease remains substantial and effective prevention requires coordinated action across sectors and levels of public administration [3]. Cancer prevention should therefore extend beyond specialist oncology services and central health authorities. Many determinants of cancer risk and participation in preventive activities are shaped within local communities, making the local level an important setting for intervention.

Local governments are particularly relevant because they operate close to residents and can adapt interventions to local demographic, epidemiological, social, and organizational conditions. Their role may include health promotion and education, implementation of health policy programmes, cooperation with healthcare providers, schools and non-governmental organizations, and activities addressing behavioural risk factors and access to preventive services. International evidence indicates that local governments can contribute substantially to population health promotion, but their

effectiveness depends on the perceived institutional capacity to translate formal responsibilities into action [4]. Thus, assigning public health responsibilities to local authorities does not necessarily ensure that they possess the resources, competencies, organizational arrangements, and implementation mechanisms required to fulfil them.

This distinction is particularly important in Poland's decentralized administrative system. Local government units (LGUs) at different levels may develop and finance health policy programmes addressing identified health needs. However, evidence indicates substantial variation in their use of these instruments. An analysis of 405 LGUs found that fewer than one third were implementing a health policy programme, with financial, organizational, and staffing barriers including limited funding, difficulties in obtaining additional resources and identifying implementers, and shortages of qualified personnel [5]. Formal responsibility for prevention therefore does not necessarily translate into sufficient operational capacity.

Studies of specific prevention areas reinforce this finding. Research on overweight and obesity programmes showed considerable variation in preventive activities undertaken by Polish local governments [6]. An analysis of diabetes-related programmes submitted by LGUs between 2012 and 2022 found that they represented only a small proportion of all submitted programmes and that implementation varied markedly across types of local government [7]. Research on municipal health programmes has likewise highlighted the potentially important role of local governments while demonstrating heterogeneity in their involvement and capacity to implement systematic health strategies [8].

This gap can be conceptualized in terms of perceived institutional capacity. In local public health, capacity extends beyond financial resources to include human resources and professional competencies, organizational and legal conditions, access to relevant data, the ability to obtain and allocate funding, cooperation with external institutions, and mechanisms for monitoring and evaluation [4]. This perspective is particularly relevant to cancer prevention, which requires interconnected functions ranging from local health-needs assessment and identification of priority populations to intervention design, financing, intersectoral cooperation, implementation, monitoring, and evaluation.

Perceived institutional capacity may also differ systematically between types of LGUs. Larger urban administrations may have greater access to specialized personnel, healthcare and academic institutions, external partners, and administrative infrastructure, whereas smaller municipalities may face greater human-resource and organizational constraints. Polish research has identified the concentration of human, financial, and organizational resources in metropolitan areas as a potentially important determinant of their capacity to undertake health promotion activities [9]. However, population size alone may not adequately capture perceived institutional capacity, as administrative status, organizational structure, expertise, interinstitutional networks, and regional context may also shape the ability of LGUs to implement public health interventions. Assessing perceived institutional capacity therefore requires consideration of both its individual components and their distribution across different structural categories of local government.

Despite the recognized role of Polish LGUs in public health and the existing evidence concerning individual health policy programmes, empirical evidence on their overall perceived institutional capacity to undertake cancer prevention remains limited. Previous Polish studies have mainly examined the implementation, financing, or characteristics of specific health policy programmes [5–8], rather than systematically assessing whether LGUs possess the human, organizational, financial, relational, analytical, and evaluation-related resources required to perform the broader range of cancer prevention tasks.

This gap is important because the formal allocation of prevention responsibilities does not necessarily indicate that local institutions possess the resources and organizational conditions required to

implement these responsibilities. Assessing perceived institutional capacity may therefore provide information that cannot be obtained from analyses of individual programmes alone.

The primary aim of this study was to assess the perceived institutional capacity of Polish LGUs to perform tasks related to cancer prevention. Specifically, we examined: (1) the overall level of perceived institutional capacity; (2) relatively stronger and weaker components of capacity; (3) the internal consistency and factor structure of the measurement indicators; (4) variation in capacity according to LGU type, population size, and voivodeship; and (5) the independent associations of these structural characteristics with perceived institutional capacity.

2. Materials and Methods

2.1. Study Design and Sample

A quantitative cross-sectional study was conducted to assess the capacity of LGUs to perform tasks related to cancer prevention. The unit of analysis was the LGU, and the empirical data consisted of responses concerning the resources, conditions, and approaches to task implementation in the area under study.

The sampling frame comprised 2,809 local government units (LGUs) in Poland. All eligible LGUs were invited by email sent to their official institutional addresses. A total of 407 completed questionnaires were included in the analysis, corresponding to an overall response rate of 14.5%. Participation was voluntary and no incentives were provided.

The final analytical sample comprised 407 LGUs: 179 rural municipalities (44.0%), 100 urban-rural municipalities (24.6%), 61 counties (15.0%), 43 urban municipalities (10.6%), and 24 cities with county rights (5.9%). LGUs from all 16 voivodeships were represented. Thus, the sample represented the main types of LGUs responsible for tasks potentially relevant to local health policy.

The units also varied in population size. Six population-size categories were included in the analyses: up to 5,000; 5,000–10,000; 10,000–20,000; 20,000–50,000; 50,000–100,000; and more than 100,000 inhabitants. The study included LGUs from all 16 voivodeships, allowing for an exploratory assessment of regional variation.

No missing data were identified for the 20 items used to construct the capacity index; a complete set of responses was available for all 407 units.

2.2. Measurement

The 20-item instrument was developed by the study team to operationalize the multidimensional concept of perceived institutional capacity for cancer prevention at the local-government level. Item content was derived from the conceptual domains identified in the literature and from the functional requirements associated with planning, implementing, coordinating, monitoring, and evaluating local cancer prevention activities [4, 10–18]. The final set of items covered human, financial, organizational, relational, analytical, technological, and evaluation-related aspects of perceived institutional capacity.

Individual statements were rated on a five-point Likert scale. Responses were coded in the direction of increasing capacity: 1 = “definitely no,” 2 = “rather no,” 3 = “neither yes nor no,” 4 = “rather yes,” and 5 = “definitely yes.” Higher values therefore indicated a more favorable assessment of a given component of LGU capacity.

The resulting index represents perceived institutional capacity. It reflects respondents’ assessments of the resources, organizational conditions, competencies, and practices of their LGUs and does not constitute an externally verified measure of actual institutional performance. Accordingly, higher scores should be interpreted as more favorable perceptions of perceived institutional capacity rather than as direct evidence of greater effectiveness of cancer prevention activities.

The psychometric properties of the indicator set were assessed before the index was used in comparative analyses. Internal consistency was evaluated using Cronbach’s α and McDonald’s ω. Corrected item-

total correlations and Cronbach's α values following the deletion of individual items were also calculated.

To assess the internal structure of the indicator set, exploratory factor analysis was conducted. The suitability of the correlation matrix for factor analysis was assessed using the Kaiser–Meyer–Olkin (KMO) measure and Bartlett's test of sphericity. The number of common factors to retain was determined using parallel analysis. This approach was adopted to reduce the risk of arbitrarily selecting the number of dimensions solely on the basis of the eigenvalue-greater-than-one criterion.

The instrument consisted of 20 items, including 19 specific indicators covering distinct components of institutional capacity and one global item assessing the respondent's overall perception of the LGU's capacity to perform cancer prevention tasks. The 20-item composite index included all items. For the assessment of convergent validity, a separate 19-item index excluding the global item was correlated with the global capacity item.

2.3. Study Procedure and Data Collection

Data were collected using the Computer-Assisted Web Interview (CAWI) method through an electronic questionnaire. Invitations to participate in the study, including a link to the questionnaire, were sent electronically to the central official email addresses of LGUs. This distribution strategy was intended to reach each LGU as an institution rather than a preselected individual respondent. Upon receipt of the invitation, each LGU was responsible for forwarding the questionnaire to a staff member with sufficient knowledge to provide responses on behalf of the institution.

Participation in the study was voluntary. Respondents independently decided whether to complete the questionnaire, and declining or discontinuing participation involved no consequences. The survey was anonymous, and no information enabling the direct identification of individual respondents was collected. The data included information on LGU characteristics and respondents' assessments of the unit's resources, organizational conditions, and approaches to performing cancer prevention tasks. The data were analyzed in aggregate, without attributing responses to individual respondents.

The use of a web-based survey ensured a standardized data collection procedure across all invited LGUs. All respondents received the same set of questions, with response categories presented in an identical format, thereby minimizing the potential influence of an interviewer on responses.

2.4. Ethical Considerations

The study was designed in accordance with the principles of voluntary participation, respondent anonymity, and confidentiality of the information collected. Before accessing and completing the electronic questionnaire, participants were informed about the purpose and nature of the study and the voluntary nature of participation. Respondents proceeded with the survey after reviewing the study information, and their decision to complete the questionnaire constituted an informed decision to participate.

The study involved no medical interventions or diagnostic procedures, did not interfere with participants' health, and involved no experimental manipulation. The study focused on assessing the perceived institutional capacity of LGUs to perform cancer prevention tasks, and the questionnaire concerned the functioning and resources of the represented institution and the manner in which relevant public tasks were performed.

During the analytical stage, the data were processed exclusively as a research dataset for the purposes of the predefined scientific objectives. Findings were reported at an aggregate level, particularly according to LGU type, population size, and voivodeship, with reporting procedures designed to prevent the identification of individual respondents.

2.5. Statistical Analysis

Descriptive statistics were calculated for the study sample and all capacity indicators. Continuous variables were summarized using means, standard deviations, medians, and ranges, while categorical responses were summarized using frequencies and percentages. Internal consistency was assessed using Cronbach's α, McDonald's ω, and corrected item–total correlations. Exploratory factor analysis was performed after assessment of sampling adequacy using the KMO statistic and Bartlett's test of sphericity; parallel analysis was used to determine the number of factors.

Differences in the capacity index according to LGU type, population-size category, and voivodeship were examined using Welch's ANOVA and the Kruskal–Wallis test. When appropriate, pairwise comparisons were performed using Welch's t-test with Holm adjustment. Effect sizes and 95% confidence intervals were reported. The association between population-size category and capacity was additionally assessed using Spearman's rank correlation.

A multivariable linear regression model was used to examine the associations of LGU type, population-size category, and voivodeship with the capacity index. HC3 heteroskedasticity-consistent standard errors were used. Regression results were reported using unstandardized coefficients, robust standard errors, 95% confidence intervals, and p-values. Model fit was summarized using R^2 and adjusted R^2. Statistical significance was assessed using a two-sided $\alpha = 0.05$ threshold.

3. Results

The final sample comprised 407 LGUs representing all five analytical LGU categories and all 16 Polish voivodeships. Rural municipalities constituted the largest group (44.0%), followed by urban-rural municipalities (24.6%), counties (15.0%), urban municipalities (10.6%), and cities with county rights (5.9%).

The mean value of the capacity index in the entire study sample was M = 2.82 (SD = 0.80; Me = 2.90), with observed scores ranging from 1.00 to 4.95. This result indicates that the overall self-assessed capacity of LGUs was concentrated around the midpoint of the scale and did not suggest a generally high assessment of local governments' capacity to perform cancer prevention tasks. The distribution of the index showed a slight deviation from normality (Shapiro–Wilk W = 0.991; p = 0.011).

Of particular importance, the direct item assessing the overall capacity of LGUs also yielded a score below the theoretical midpoint corresponding to a neutral response (M = 2.68; SD = 1.06). Only 24.8% of respondents reported that the overall capacity of their LGU to perform the tasks under study was rather high or definitely high. At the same time, 43.0% gave a negative response ("rather no" or "definitely no"), while 32.2% selected the neutral response.

The capacity profile showed a clear differentiation between relational and internally dependent components. Cooperation with educational institutions (M = 3.41) and healthcare providers (M = 3.18) received the most favorable assessments. In contrast, human resources and staff competencies (M = 2.40), technological capacity (M = 2.41), locally tailored prevention programmes (M = 2.50), financial resources (M = 2.59), and monitoring and evaluation indicators (M = 2.64–2.71) received less favorable assessments (Table 1).

Table 1. Descriptive statistics of the perceived institutional capacity items

Item	M	SD	Positive responses, %
Information provided by central authorities is sufficient	3.00	1.16	35.4
Legal regulations are clear and comprehensible	3.14	1.04	44.5
Staff can rely on assistance from central authorities	3.11	1.07	34.4

Sufficient human resources and staff competencies	2.40	1.19	22.9
Sufficient financial resources	2.59	1.13	23.3
Use of external funding sources	2.63	1.15	24.8
Cooperation with central authorities	2.89	1.12	30.5
Cooperation with the public payer (NFZ)	2.95	1.13	33.4
Cooperation with other local government units	2.87	1.10	33.4
Cooperation with non-governmental organizations	3.12	1.13	43.7
Cooperation with the scientific community	2.70	1.10	27.0
Cooperation with local healthcare providers	3.18	1.13	47.4
Cooperation with educational institutions	3.41	1.05	57.5
Engagement of the local community in decision-making	3.00	1.13	35.4
Monitoring and analysis of cancer-related health indicators	2.64	1.06	22.6
Cancer prevention programmes tailored to local needs	2.50	1.17	23.8
Use of modern technologies and innovations	2.41	1.06	15.7
Evaluation of healthcare and public health activities	2.71	1.14	27.5
Effectiveness of activities undertaken by the local authority	2.65	1.07	21.4

M, Median; SD, Standard Deviation

The scale used to assess LGU capacity demonstrated very high internal consistency. Cronbach's α was 0.956, while McDonald's ω was 0.957. Corrected item-total correlations ranged from 0.541 to 0.796. Removal of none of the items resulted in a meaningful improvement in Cronbach's α.

The 20 items demonstrated very high internal consistency (Cronbach's $\alpha = 0.956$; McDonald's $\omega = 0.957$), with corrected item–total correlations ranging from 0.541 to 0.796. Deletion of individual items did not materially increase Cronbach's α. The index based on the 19 specific items was strongly correlated with the independent global assessment of LGU capacity ($r = 0.758$; $p < 0.001$). This association provides preliminary evidence that the specific indicators capture an aspect of the broader construct assessed by the global item. However, because no external criterion or objective measure of perceived institutional capacity was available, the present study does not establish criterion validity.

The data were highly suitable for exploratory factor analysis. The Kaiser–Meyer–Olkin measure was KMO = 0.954, while Bartlett's test of sphericity was statistically significant, $\chi^2(190) = 6084.45$; $p < 0.001$.

Statistically significant variation in capacity was observed according to the type of LGU. Because Levene's test was significant ($p = 0.002$), indicating violation of the homogeneity of variance assumption, Welch's analysis of variance was used as the primary basis for inference. It demonstrated significant differences between LGU types, $F_{Welch}(4, 114.69) = 10.44$; $p < 0.001$. This finding was confirmed by the non-parametric Kruskal–Wallis test, $H(4) = 19.31$; $p < 0.001$. Effect sizes in the conventional analysis of variance were $\eta^2 = 0.040$ and $\omega^2 = 0.031$, indicating that LGU type explained a small but non-negligible proportion of the variation in overall capacity.

The highest level of capacity was observed among cities with county rights (n = 24; M = 3.42; SD = 0.45). This score was clearly higher than those observed among urban municipalities (n = 43; M = 2.92; SD = 0.74), urban-rural municipalities (n = 100; M = 2.82; SD = 0.89), counties (n = 61; M = 2.82; SD = 0.73), and rural municipalities (n = 179; M = 2.73; SD = 0.80). Figure 1 presents the detailed results.

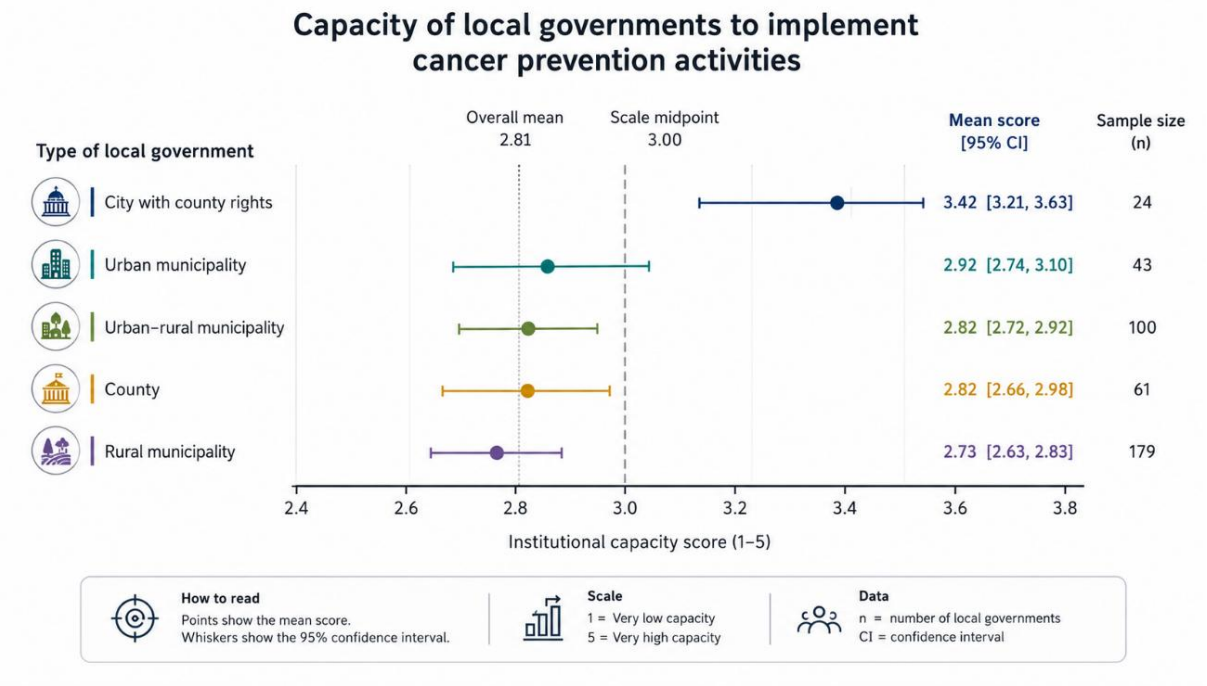


Figure 1. Perceived institutional capacity for cancer prevention by type of local government unit.*

* Points represent mean scores of the perceived institutional capacity index and error bars represent 95% confidence intervals. Higher scores indicate greater perceived capacity to implement cancer prevention activities. The dashed vertical line indicates the midpoint of the 1–5 response scale. Differences between local government types were statistically significant in Welch's ANOVA, $F(4, 114.69) = 10.44$, $p < 0.001$.

Post-hoc comparisons using Welch's t-tests with Holm correction confirmed that cities with county rights achieved significantly higher scores than rural municipalities (Hedges' $g = 0.90$; $p_{Holm} < 0.001$), counties ($g = 0.90$; $p_{Holm} < 0.001$), urban-rural municipalities ($g = 0.73$; $p_{Holm} < 0.001$), and urban municipalities ($g = 0.76$; $p_{Holm} = 0.007$). These effect sizes indicate differences of moderate to large magnitude. No statistically significant differences were observed among the remaining types of LGUs. Mean capacity index values showed a descriptive increase with population size, from $M = 2.73$ ($SD = 0.81$) among units with up to 5,000 inhabitants to $M = 2.97$ ($SD = 0.69$) among units with more than 50,000 inhabitants. However, differences between population-size categories were not statistically significant either in Welch's analysis, $F(5, 128.60) = 1.16$; $p = 0.333$, or in the Kruskal–Wallis test, $H(5) = 6.75$; $p = 0.240$.

A weak positive Spearman rank correlation was nevertheless observed between population-size category and the capacity index ($\varrho = 0.120$; $p = 0.016$). The magnitude of this association was small and therefore does not justify a conclusion that population size is strongly associated with LGU capacity. Moreover, in the multivariable model, after adjustment for LGU type and voivodeship, population size was no longer associated with capacity ($B = -0.007$; $p = 0.920$). After adjustment for LGU type and voivodeship, population-size category was not statistically associated with perceived institutional capacity ($B = 0.007$; $p = 0.920$). Within the variables included in the present model, there was therefore

no evidence of an independent association between population size and perceived institutional capacity.

At the descriptive level, differences in mean capacity index values were observed across voivodeships. However, there was insufficient statistical evidence to establish systematic regional variation. Welch's analysis did not demonstrate a significant effect of voivodeship, $F_{Welch}(15, 130.27) = 1.46$; $p = 0.129$. A similar conclusion was obtained from the Kruskal–Wallis test, $H(15) = 19.76$; $p = 0.181$.

The overall model explained 9.3% of the variance in the capacity index ($R^2 = 0.093$), with an adjusted $R^2 = 0.046$. This indicates that the structural characteristics included in the analysis explained only a limited proportion of the differences between units. The model explained a relatively small proportion of the variance in perceived institutional capacity ($R^2 = 0.093$; adjusted $R^2 = 0.046$), indicating that LGU type, population-size category, and voivodeship account for only a limited part of the observed heterogeneity. The model should therefore be interpreted as an analysis of selected structural associations rather than as a comprehensive explanatory or predictive model of perceived institutional capacity.

After adjustment for population size and voivodeship, cities with county rights continued to have significantly higher scores than rural municipalities, which constituted the reference category ($B = 0.693$; $SE_{HC3} = 0.198$; 95% CI [0.305, 1.081]; $p < 0.001$). This corresponds to an average difference of approximately 0.69 points on the five-point capacity index after accounting for the remaining variables in the model. No analogous independent effects were observed for urban-rural municipalities, urban municipalities, or counties. Population size was not an independent predictor of capacity after adjustment for the remaining variables ($p = 0.920$). This finding further indicates that the advantage observed among cities with county rights cannot be attributed solely to their larger populations. Local government type was statistically significant as an overall predictor set (Wald $\chi^2(4) = 18.48$, $p < 0.001$), although only the contrast involving cities with county rights reached statistical significance at the individual-category level (Table 2).

Table 2. Multivariable linear regression of factors associated with perceived institutional capacity for cancer prevention*,**

Predictor	B	Robust SE (HC3)	95% CI	p-value
Population size category, per one-category increase	−0.007	0.038	−0.079 to 0.071	0.920
Urban–rural municipality	0.133	0.112	−0.087 to 0.353	0.235
Urban municipality	0.160	0.166	−0.166 to 0.485	0.336
County	0.082	0.181	−0.273 to 0.438	0.649
City with county rights	0.693	0.198	0.305 to 1.081	<0.001

*N = 407; $R^2 = 0.093$; adjusted $R^2 = 0.046$. Local government type was significant as a set of predictors: Wald $\chi^2(4) = 18.48$, $p < 0.001$, whereas voivodeship was not significant overall: Wald $\chi^2(15) = 20.42$, $p = 0.157$.

**Abbreviations: B, unstandardized regression coefficient; SE, standard error; HC3, heteroskedasticity-consistent covariance matrix estimator (type 3); CI, confidence interval; R^2, coefficient of determination; adjusted R^2, coefficient of determination adjusted for the number of predictors; χ^2, chi-square statistic; N, sample size; p, p-value.

4. Discussion

The present study assessed the perceived institutional capacity of Polish LGUs to perform cancer prevention tasks. Three main findings emerge. First, the overall level of perceived capacity was

moderate rather than high, with the composite index concentrated around the midpoint of the scale. Second, the capacity profile was uneven: relational components, particularly cooperation with educational institutions and healthcare providers, were assessed more favorably than components dependent on internal human, financial, technological, analytical, and evaluation resources. Third, LGU type was associated with perceived capacity, whereas population size and voivodeship were not independently associated with capacity after adjustment.

The relatively favorable assessment of cooperation suggests that many LGUs may have established external networks that can support prevention activities. In contrast, lower assessments of staffing, financing, technology, data use, programme implementation, and evaluation point to limitations in the internal infrastructure required to independently conduct the full prevention cycle. These findings are consistent with previous research emphasizing that local public health capacity encompasses organizational resources, competencies, knowledge, intersectoral relationships, and implementation mechanisms rather than financial resources alone [4,10–14].

The finding concerning cities with county rights should be interpreted as an association rather than a causal effect. The observed difference persisted after adjustment for population size and voivodeship, but the model explained only 9.3% of the variance in perceived capacity. This indicates that important determinants were not included in the present analysis. Possible factors include local government revenues and health expenditure, staffing levels and qualifications, specialized organizational structures, previous programme experience, access to epidemiological expertise, healthcare infrastructure, and broader administrative capacity. The present data do not permit assessment of these potential mechanisms.

Technology and innovation represented another weak area, with only 15.7% of respondents providing a positive assessment. Together with limited monitoring and evaluation capacity, this suggests weaknesses in local analytical capacity, which is essential for identifying needs, monitoring risk factors, and assessing intervention outcomes [15–17]. The findings indicate that the main challenge is not only initiating activities but completing the full public health cycle, from needs assessment and programme design to implementation, monitoring, and evaluation [18]. Although cooperation was assessed relatively favorably, this does not necessarily reflect the capacity to independently design and evaluate interventions.

Cities with county rights demonstrated markedly higher capacity, both before and after adjustment for population size and voivodeship. This may reflect their specific institutional configuration and greater access to healthcare, organizational resources, and external partners [19,20]. However, given the cross-sectional design, these associations cannot be interpreted causally and may reflect differences in staffing, funding, expertise, institutional experience, or administrative capacity.

The regression model explained less than 10% of the variance, indicating that LGU type, population size, and voivodeship capture only a limited part of the determinants of perceived institutional capacity. Future research should therefore examine factors such as income, health expenditure, staffing and qualifications, specialized organizational units, previous programme experience, access to epidemiological data, and cooperation with healthcare institutions [5]. The lack of a significant voivodeship effect further suggests that local institutional characteristics may be more important than regional location, although this finding should be interpreted cautiously given differences in LGU representation across voivodeships [9,10].

From a policy perspective, strengthening LGUs' role in cancer prevention should involve not only formal responsibilities but also investments in staff competencies, financial-resource management, epidemiological data and analytical tools, programme design, and monitoring and evaluation standards [21,22]. Existing cooperation with healthcare and educational institutions provides a potential foundation for more integrated local prevention systems involving LGUs, healthcare providers, schools, NGOs, academia, and central institutions [11].

Overall, Polish LGUs show considerable variation in cancer-prevention capacity. Cooperation represents a relative strength, whereas human resources, technology, financing, locally tailored programmes, and monitoring and evaluation remain key areas of limitation [12,15,22]. The higher capacity observed among cities with county rights also indicates structural differences in the ability of LGUs to undertake cancer prevention activities [19,20].Importantly, the findings describe perceived institutional capacity rather than objectively verified organizational performance. A higher capacity score should not be interpreted as evidence of higher cancer screening uptake, lower cancer incidence or mortality, or greater effectiveness of prevention programmes. Future research should therefore combine institutional-capacity measures with objective indicators of resources, programme implementation, service utilization, screening participation, and population health outcomes.

4.1. Strengths and Limitations

The main strengths of the study are the inclusion of 407 LGUs representing all major LGU types and all 16 voivodeships, the multidimensional assessment of perceived institutional capacity, and the use of several complementary analytical approaches. The measurement included organizational, human-resource, financial, relational, analytical, technological, and evaluation-related components. The analytical strategy incorporated robust and non-parametric procedures, effect-size estimates, confidence intervals, and heteroskedasticity-consistent standard errors, allowing the observed associations to be assessed in terms of both statistical evidence and magnitude.

Several limitations should be considered. First, the cross-sectional observational design precludes causal inference. In particular, the higher capacity observed among cities with county rights cannot be attributed to administrative status itself and may reflect differences in financial resources, staffing, specialization, access to healthcare and academic institutions, or previous programme experience.

The capacity index was based on self-reported perceptions rather than externally verified performance. It should therefore be interpreted as perceived institutional capacity, not objective organizational effectiveness. Moreover, capacity does not necessarily translate into greater screening uptake, reduced risk-factor exposure, or better cancer outcomes, as the study assessed the perceived ability to plan, implement, coordinate, monitor, and evaluate preventive activities rather than their population-level effects.

The sample was uneven across LGU categories, with cities with county rights constituting a relatively small subgroup. Although methods robust to unequal group sizes and variances were applied, estimates for smaller groups are less precise. The regression model also explained only a limited proportion of capacity variance, indicating that relevant factors—such as revenues, health expenditure, staffing and qualifications, specialized units, programme experience, epidemiological expertise, healthcare infrastructure, and managerial capacity—were not fully captured.

Measurement limitations should also be noted. The instrument was developed specifically for this study and was not based on a previously validated standardized scale. Although internal consistency was high, the factor structure was examined in the same sample used for analysis and therefore requires replication in an independent sample using confirmatory factor analysis. The very high reliability may also indicate some item redundancy, supporting further assessment of a more parsimonious version.

Finally, voluntary participation and the lack of sufficient data on non-participating LGUs prevent assessment of selection bias. LGUs with greater public health engagement or organizational resources may have been more likely to participate. Respondent characteristics, including professional position and experience, were also not systematically recorded. Thus, findings describe the perceived capacity of participating LGUs and should not be interpreted as an unbiased estimate for all Polish LGUs. Future research should combine capacity measures with objective indicators such as programme implementation, expenditure, staffing, screening uptake, service utilization, and cancer outcomes.

5. Conclusions

This study found that Polish LGUs reported moderate perceived institutional capacity to perform cancer prevention tasks, with substantial variation across specific capacity domains. Cooperation with educational institutions and healthcare providers was assessed relatively favorably, whereas human resources and staff competencies, financing, technological capacity, locally tailored prevention programmes, and monitoring and evaluation were assessed less favorably. LGU type was associated with perceived institutional capacity, while population size and voivodeship were not independently associated with capacity in the multivariable model. Because the study measured perceived rather than objectively verified perceived institutional capacity, these findings should not be interpreted as direct evidence of differences in actual cancer prevention performance. Strengthening workforce competencies, financial and analytical resources, implementation capacity, and systematic monitoring and evaluation may help address the institutional barriers identified in the study. Future research should combine institutional-capacity measures with objective indicators of organizational resources, programme implementation, preventive service utilization, and population health outcomes.

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Abbreviations

The following abbreviations are used in this manuscript:

LGU	Local Government Unit
LGUs	Local Government Units
CAWI	Computer-Assisted Web Interview
NFZ	National Health Fund
KMO	Kaiser–Meyer–Olkin
ANOVA	Analysis of Variance
HC3	Heteroskedasticity-Consistent Covariance Matrix Estimator (Type 3)
SD	Standard Deviation
M	Mean
Me	Median
CI	Confidence Interval
SE	Standard Error

B	Unstandardized Regression Coefficient
R^2	Coefficient of Determination
α	Cronbach's Alpha
ω	McDonald's Omega
ϱ	Spearman's Rank Correlation Coefficient
EFA	Exploratory Factor Analysis
p	p-value
N	Sample Size

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