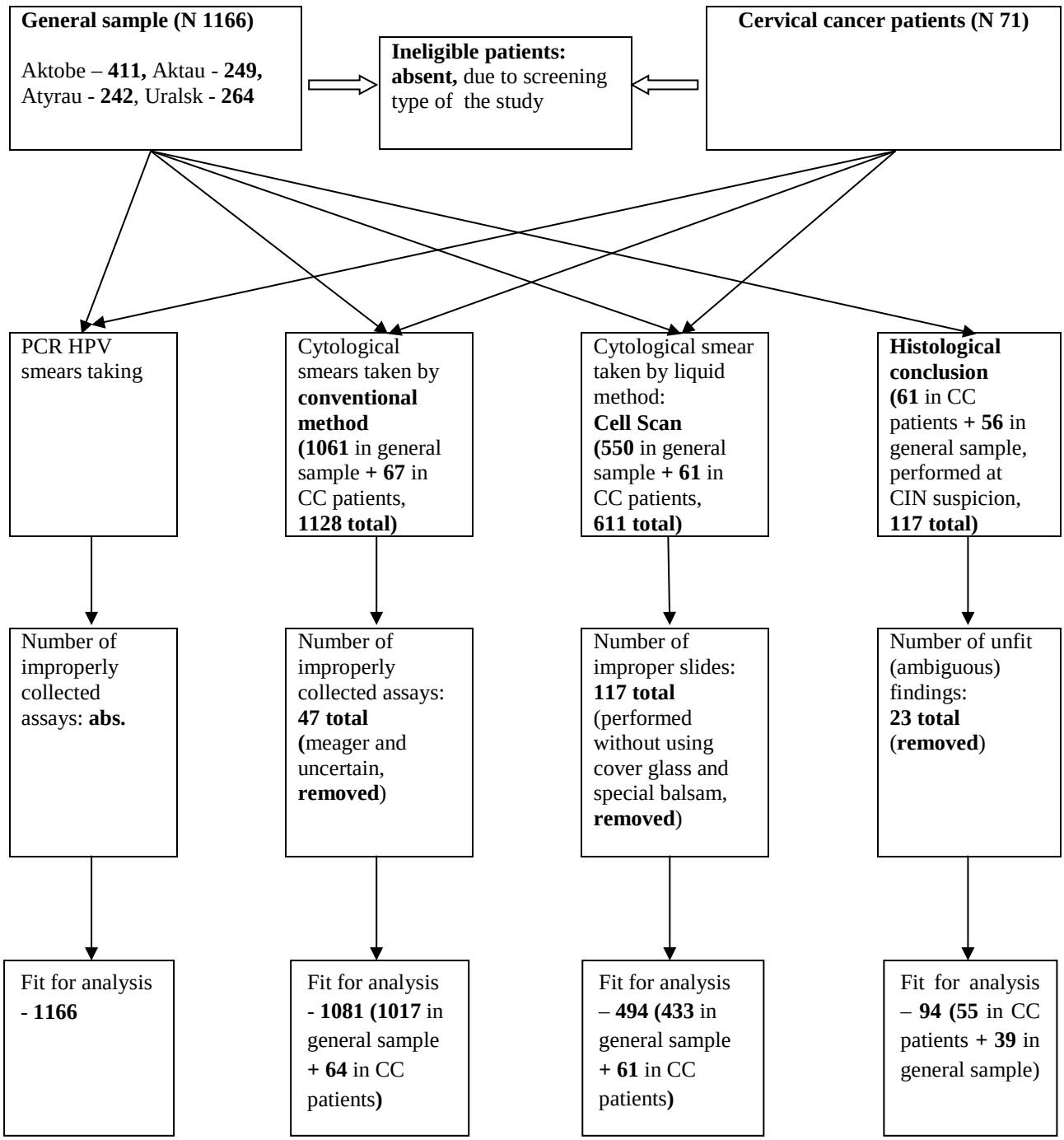
Participant flow



Baseline characteristics

Characteristics		Women from general population (total 1166)	Women from the group of Cervical cancer (total 71)
Age categories	18-29	37.7%	1.5%
	30-39	34.0%	21.9%
	40-49	17.8%	34.4%
	50-60+	10.5%	42.2%
Average age of surveyed		34.5±9.9 (range 16-63) M 33.0 (27.0-41.0 by 25/75 quartile)	49.0±12.4 (45.9-52.1, CI 95%), M 47.5 (28-80; by 25/75 quartile 40.0 – 58.5).
Ethnicity	Asian	85.3%	79.7%
	European	13.6%	20.3%
	Other (Caucasian)	1.1%	-
Education level	School	31.4%	65.6%
	College	22.9%	17.2%
	University	45.7%	17.2%
Employment	Not occupied	33.6%	48.4%
	Low-skilled labor	13.7%	26.5%
	Representatives of the common sector	20.7%	9.4%
	Highly qualified work	32.0%	15.6%
(Income per capita)	(≤100$ up to 200$	40.1%	17.2%
	200-500$	39.4%	32.8%
	500-1000$ and >	20.5%	3.1%
Total number of pregnancies	none	10.7%	3.1%
	1-2	36.1%	25.0%
	3 and more	53.2%	71.9%
Average number of pregnancies in the history		3.0±2.2 (range 0-16) M 3.0 (2.8-4.4 by 25/75 quartile)	
Hereditary factor: presence of close relatives with cervical cancer	Yes	5.1%	9.4%
	No	94.9%	90.6%
Age of onset of sexual activity*		20.8±3.4 (range 13-45) M 20.0 (18.0-22.0 by 25/75 quartile)	20.3±2.3 (19.4 – 20.8;CI 95%), M 20.0 (range 15-27; 25/75 quartile 19.0 – 21.0).
Experience of sexual life	0 - 10 years	47.2%	3.1%
	11- 20 years	29.9%	31.3%
	More than 20 years	22.9%	65.6%
The average experience of sexual life		13.5±9.2 (range 1-45) M 12.0 (6.0-20.0 by 25/75 quartile)	26.5±10.8 (23.3 – 29.7; CI 95%), M 22.0 (range 7-59).
Number of sexual partners during life	1 partner	64.7%	60.9%
	2 - 5 partners	28.2%	28.1%
	6 and more	7.1%	10.8%
Average number of sexual partners during life		2.2±2.9 (range 1-30) (1.9;2.7 CI 95%)	3.0±3.4 (2.1 – 3.9; CI 95%), M 1.0 (range 1-15).
Application of BCP	Birth control pills	4.8%	-
Attitude towards smoking*	Smoking *	10.8%	9.4%
	Do not smoke	89.2%	90.6%
Attendance of the state-sponsored PHC at the place of residence	Visits constantly	40.7%	31.3%
	Visits sometimes, irregularly	46.3%	39.0%
	Does not visit, only private medical facilities	13.0%	29.7%

Participation in state screening program for cervical cancer	Constantly participates	34.7%	39.0%
	Participates irregularly	28.0%	15.6%
	Does not participate – ignores in favor of private clinics	37.3%	45.3%
Awareness of vaccination against cervical cancer	Knows nothing about vaccination	38.8%	60.9%
	Heard about vaccination, but does not know how to treat	33.6%	25.0%
	Welcomes vaccination against cervical cancer	22.9%	10.9%
	Set against vaccination (consider unnecessary and dangerous)	4.7%	3.1%

Outcome measures

Primary outcomes		Women from general population (total 1166)	Women from the group of Cervical cancer (total 71)
1. Total HPV prevalence and in the each province of the region:		Total % across the region – 24.9% (22.3;27.7 CI 95%, p=0.05); Mangystau – 19.3 (CI 95% 14.5;24.2) p=0.049; Aktobe – 23.9 (19.7;28.6) p=0.044; Atyrau – 28.0 (22.8;34.1) p=0.056; Uralsk – 29.5 (24.0;34.9) p=0.054	
2. Average viral load in HPV-infected, both in general population and in CC diseased:		5.5±3.8 (0.9–22.3; CI 95% 5.1;5.9)	6.9±4.0 (3.1-19.5; CI 95% 6.1;7.7)
2. HPV leading types in general population and in CC diseased:		type 16 – 26.4% type 31 – 10.1% type 51 – 9.4% type 52 – 9.0% type 6 – 7.9%	type 16 – 71.9% type 31 – 14.1% type 58 – 7.8% type 18 – 7.8% type 33 – 6.2%
4. % of women infected HR-HPV genotypes in each age categories	18-29	26.7 (p 0.003)	
	30-39	21.1 (p 0.013)	
	40-49	9.8 (p 0.004)	
	50-60+	8.2 (p 0.019)	
5. % and distribution of HPV different types in normal cytology;		Total % - 44.8; leading types – **16** (**30.8%**); 31 – 13.5%; 6 – 11.5%; 66 – 9.6%; 51 – 7.7%.	
6. The most significant risk factors for the CC implementation:		**Age 50-60+** (p-value 0.003, Cramer's V 0.29)	
		Education – school level (p-value 0.00075, Cramer's V 0.33)	
		Occupation – not occupied (p-value 0.00053, Cramer's V 0.37)	
		Income per capita - below or barely exceeding the subsistence level (p-value 0.001, Cramer's V 0.33)	
		Experience of sexual life – more than 20 years (p-value 0.007, Cramer's V 0.28)	
		Participation in screening programmes – non-participating (p-value 0.006, Cramer's V 0.28)	
		Vaccination awareness – fully not aware (p-value 0.026, Cramer's V 0.27)	
		Presence of HPV type 16 – (p-value 0.00007, Phi 0.35)	
7. Probability of the Cervical cancer decrease (ORs):		**Income per capita – off-being category** (0.0713, CI 95% - 0.0130-0.3912)	
		Participation in screening programmes – even though irregular (sometimes) participating (0.3384, CI 95% - 0.1269 – 0.9023)	

Secondary outcomes	
1. Results of comparison of two cytological methods operating in the region (amount of non-informative material by each method; degree of concordance with histological conclusions in each method; results of ROC analysis; Kappa statistics)	Non-informative material by each method: CellScan – 5.9% vs. 0.4% by Romanovsky-Giemsa
	Concordance with histological conclusions: CellScan – 61.7% vs. 60.6% by Romanovsky-Giemsa
	Data on ROC-analysis: CellScan – AUC 0.84 vs. AUC 0.92 by Romanovsky-Giemsa
	Kappa statistics: CellScan – κ = 0.47 vs. 0.62 by Romanovsky-Giemsa
2. Colposcopic data: correlation between HPV viral load and points RCI (Reid colposcopic index)	Spierman's r=0.316, p-value – 0.0000
3. Overall trend of CC morbidity in the region and in	Overall trend tends to increase with the rate of growth

each age categories		Tpr = 3.2%. In 18-29 years category - Tpr = - 3.1%; in 30-39 - Tpr = - 6.2%; in 40-49 - Tpr = 5.5%; in 50-59 - Tpr = 0.9%; in 60-69 - Tpr = 3.6%. in 70+ - Tpr = 13.6%.
4. Detection of various HPV gene L1 isolates circulating in the region	Aktau	The isolate of genotype 18, similar to KC470221.1 isolate, country - the USA
	Aktobe, Alga	An authentic isolate for the region, not represented in the world genebank.
	Aktau	Isolate KC706450.1 from Saudi Arabia.
	Aktobe	A sequence is obtained, similar to EU918764 isolate, the country is China.
	Uralsk	An isolate forming a remote cluster with KF436822 / 1, KU951264.1 - Southwest China, 97% identity with EU056643.1 - Ireland was obtained.
	Khromtau, Aktobe	An isolate similar to KU951264 /1 was obtained, forming a separate cluster with AJ617545.1, the country of origin of both isolates is Cyprus.
	Khromtau, Aktobe	Common cluster with isolates KU707481.1 (country - Netherlands), GQ465900 (country - Canada).
	Aktobe, Shalkar	An isolate of genotype 16 similar to isolate AJ617545.1 was obtained. Country - Republic of Cyprus
	Aktobe, Temir	An isolate of genotype 16 similar to isolate EF133498.1 was obtained. Country – Portugal.
	Aktobe, Kayndy	An isolate of genotype 31, similar to isolate KX514424.1, was obtained. Country - Brazil

Adverse events

There were no **adverse events** associated with this study due to the absence of interventions. The study constituted a kind of screening and all enrolled were being interviewed and examined by commonly accepted methods during one-time visit.