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Baseline document
for a Central Asia curricular proposal
for the professionalization
of children care management

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Abbreviations List

CA	Central Asia
CBHE	Capacity Building in Higher Education
EU	European Union
HEI	Higher Education Institutions
IO	International Office
KazNMU	Kazakhstan National Medical University
MD	Medicinae Doctor
OSCE	Objective Structured Clinical Examination
UEMS	Union of European Medical Specialists
UEMS-SP	UEMS Section of Pediatrics
UN	United Nations
UNFPA	United Nations Population Fund
WHO	World Health Organization

1 Introduction

ChildCA Capacity Building in Higher Education (CBHE) project has been designed to “...help higher education institutions from partner countries to develop, modernise and disseminate new curricula, teaching methods or materials... [aiming to] improve skills, modernise higher education systems and institutions, and create better partnerships between the EU and education systems across the world”, pursuing specifically these aims:

- 1) To support the modernization, professionalization and internationalization of postgraduate training in the field of children care management in CA Countries, in cooperation with HEIs from EU which are willing to bring their expertise and experience in relation to the specific objectives of the project;
- 2) To support CA Countries to improve quality, relevance, planning, and delivery of postgraduate training in Children Care Management of their Higher Education Institutions (HEIs), in view of a possible structural improvement in the organization of said training;
- 3) To promote a similar improvement of postgraduate training offers in other fields of medical care, in the meanwhile promoting an in-depth analysis in this field in European HEIs;
- 4) To emphasize the importance of children’s care in the ongoing process of the Health Care Reform in CA countries, thus contributing to reduce the infant mortality through an updated approach to the modern techniques of neonatal and pediatric care;
- 5) To give a sound basis in the pediatric preparation of medical professionals devoted to the Primary Health Care;
- 6) To increase the skills of International Offices (IO) of CA HEI through specific training and mostly an “on the job” interaction with IO of EU HEI;
- 7) To enhance the relevance of CA countries scientific research in the international scientific literature scenario, through a deeper interaction with EU partner universities and a more informed relationship in the arena of scientific peer reviewing;
- 8) To promote people to people contact, intercultural awareness and understanding in a multi-country HEIs networking.

According to what detailed in the project, this baseline document is aimed to establish a sound basis on which to build a new curricular project, that will be designed on the ground of an accurate selection of the more appropriate contents and best practices to be adopted and implemented by the Postgraduate Training Schools (PGTS) in Pediatrics, Pediatric Surgery and Child Neuropsychiatry of the partner CA Medical Faculties.

After this introductory chapter, the second chapter of the document will be devoted to present a wide array of data related to the health situation in the three partner Countries, with a particular interest obviously related to pediatric age. Presented data are a compilation of pages taken from a data mining in official websites of the UN ¹, of the UNFPA ² and of the World Health Organisation ³: the choice of downloading data only from United Nations websites has been purposefully taken in order to avoid the risk of relying on uncontrolled, fake or possibly biased data sources.

The third chapter will present and analyze what foreseen in the project itself at the Working Package 1: since the construction of a curricular project constitutes a process of meditation and decision-taking which will finally determine the quality of professional preparation of the trainees involved, “ad hoc” questionnaires for the survey of user needs have been created and disseminated through the partner Countries to allow the collection

¹ <https://population.un.org/wpp/DataQuery/> - United Nations, Department of Economic and Social Affairs, Population Division (2019). World Population Prospects 2019, custom data acquired via website.

² <https://www.unfpa.org/>

³ <https://www.who.int/countries/en/>

of information on the vision and needs of the different actors (education and health authorities, academic staff, professionals and professional associations, postgraduate and undergraduate students).

Fourth chapter will be devoted to present and discuss what learned from the assessment of a sample of students in the three pediatric areas involved in the project; this part will be drafted by the experts of the UEMS – the most authoritative European medical organization in the field of postgraduate training - charged of running the assessment which took place in Bukhara the 13th September 2019.

In its last part the document will summarize the most relevant concepts emerged from the previous chapters, in order to draw some general guidelines and recommendations on which to design the new proposed curricula.

2 Health general data in Partner Countries

Source: <https://www.who.int/countries/en/>

<https://www.unfpa.org/>

2.1 Kazakhstan Health data

Kazakhstan

Map



This map is an approximation of actual country borders.

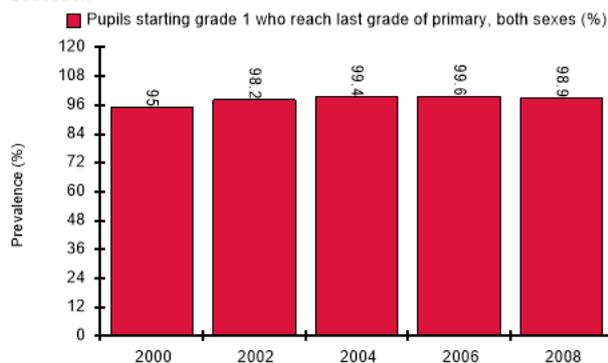
Statistics

Total population (2016)	17,988,000
Gross national income per capita (PPP international \$, 2013)	20,570
Life expectancy at birth m/f (years, 2016)	67/75
Probability of dying under five (per 1 000 live births, 2017)	10
Probability of dying between 15 and 60 years m/f (per 1 000 population, 2016)	256/108
Total expenditure on health per capita (Intl \$, 2014)	1,068
Total expenditure on health as % of GDP (2014)	4.4

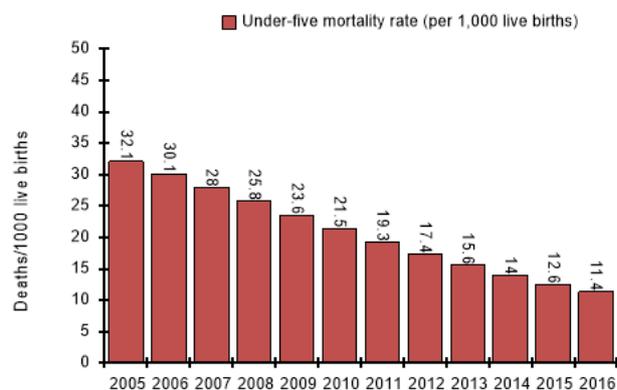
Latest data available from the Global Health Observatory

Education

Education

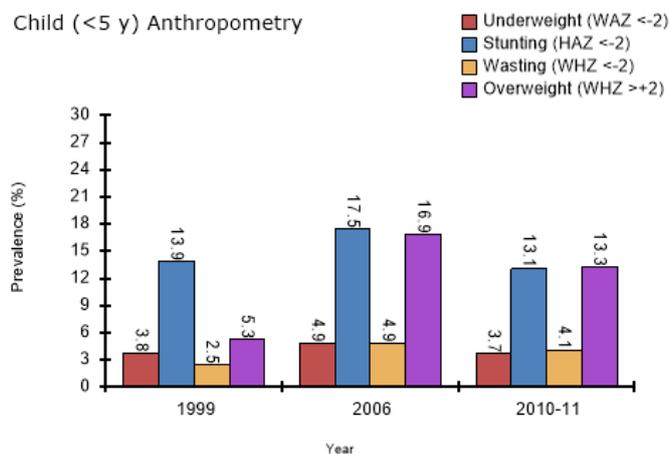


Under 5 Mortality



Child Malnutrition

Child (<5 y) Anthropometry

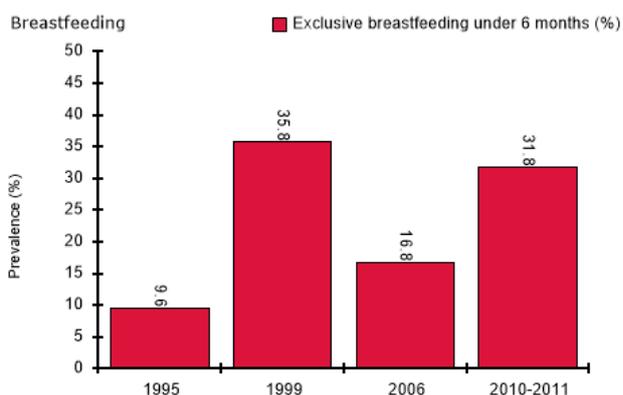


Indicator	Year	Value
Overweight (BMI-for-age >+1 SD) in school-age children and adolescents 5-19 years (%)	2016	19.7

Indicator	Kazakhstan													
	2015	2014	2013	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002
Children aged < 5 years with pneumonia symptoms taken to a healthcare provider (%) ⁱ										71 ⁱ				
Children aged <5 years with ARI symptoms who took antibiotic treatment (%) ⁱ											31.7			
Children aged <5 years with diarrhoea receiving ORT (%) ⁱ											74.0 ⁱ			
Gross national income per capita (PPP int. \$) ⁱ				18860	17710	16710	15990	15460	15230	13900	12570	11580	10470	9530
Physicians density (per 10 000 population) ⁱ							40.99							
Number of under-five deaths (thousands) ⁱ	5	5	6	6	7	7	8	8	9	9	9	9	9	9
Number of infant deaths (thousands) ⁱ	4	5	5	6	6	7	7	7	8	8	8	8	8	8
Number of neonatal deaths (thousands) ⁱ	2	2	3	3	4	4	4	4	4	4	5	5	5	5
Population median age (years) ⁱ			29.4	29.2										
Population living in urban areas (%) ⁱ						53.7								
Hospital beds (per 10 000 population) ⁱ			67 ⁱ	70 ⁱ	71 ⁱ	73 ⁱ	76 ⁱ	77 ⁱ	77 ⁱ	78 ⁱ	78 ⁱ	78 ⁱ	77 ⁱ	70 ⁱ

Caring Practices

Indicator	Year	Value	Source Info
Early initiation of breastfeeding within 1 hour of birth (%) ?	2015	83.3	View
Introduction to solid, semi-solid or soft foods in infants 6-8 months (%) ?	2015	66.5	View
Minimum acceptable diet (MAD) in children 6-23 months (%) ?		no data	
Children with diarrhoea <5 y receiving oral rehydration therapy (ORT) and continued feeding (%) ?	2011	54.0	View



Commitment

Indicator	Year	Value	Source Info
General government expenditure on health as % of total government expenditure ?	2014	10.9	View
Total expenditure on health as % of gross domestic product ?	2014	4.4	View
Per capita total expenditure on health (US\$) ?	2014	1068.1	View
Nutrition component of the United Nations Development Assistance Framework (UNDAF) ?		no data	
Nutrition component of Poverty Reduction Strategy Paper (PRSP) ?		no data	
Nutrition Governance score ?		no data	
Maternity protection: Compliance with international labour standards ?	2014	Meets three provisions of C183	View
International Code on Marketing of Breast-milk Substitutes: Legal status of the Code ?	2016	Few provisions in law	View
Maternity leave ?	2013	18 weeks	View

Capacity

Indicator	Year	Value	Source Info
Degree training in nutrition exists ?		no data	
Nutrition is part of medical curricula ?	2016-2017	Yes	View
Nutrition professionals density (per 100,000 population) ?		no data	
Nursing and midwifery personnel density per 1,000 population ?	2013	8.0	View
GDP per capita (PPP US\$) ?	2014	24,205	View
GDP per capita annual growth rate (%) ?	2014	4.3	View
Official development assistance (ODA) received (net disbursements) (% of GNI) ?	2013	0.0	View
Low-Income Food-Deficit Country (LIFDC) ?	2016	No	View

2.2 Tajikistan Health data

Tajikistan

Map



This map is an approximation of actual country borders.

Statistics

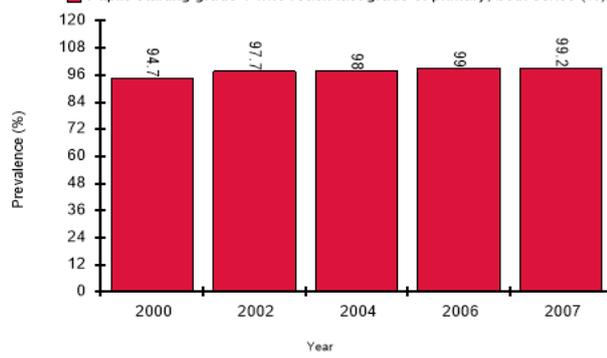
Total population (2016)	8,735,000
Gross national income per capita (PPP international \$, 2013)	2,500
Life expectancy at birth m/f (years, 2016)	69/73
Probability of dying under five (per 1 000 live births, 2017)	34
Probability of dying between 15 and 60 years m/f (per 1 000 population, 2016)	156/91
Total expenditure on health per capita (Intl \$, 2014)	185
Total expenditure on health as % of GDP (2014)	6.9

Latest data available from the Global Health Observatory

Education

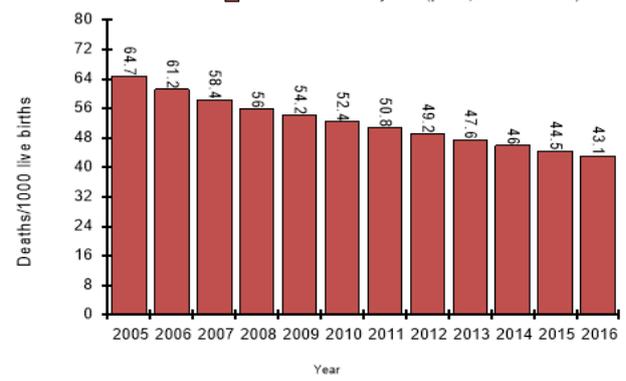
Education

■ Pupils starting grade 1 who reach last grade of primary, both sexes (%)



Under 5 Mortality

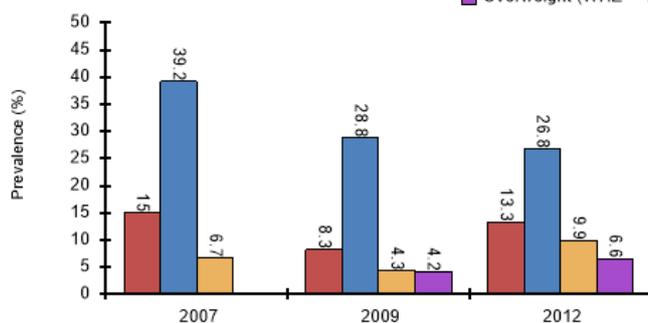
■ Under-five mortality rate (per 1,000 live births)



Child Malnutrition

Child (<5 y) Anthropometry

■ Underweight (WAZ <-2)
 ■ Stunting (HAZ <-2)
 ■ Wasting (WHZ <-2)
 ■ Overweight (WHZ >+2)



Indicator

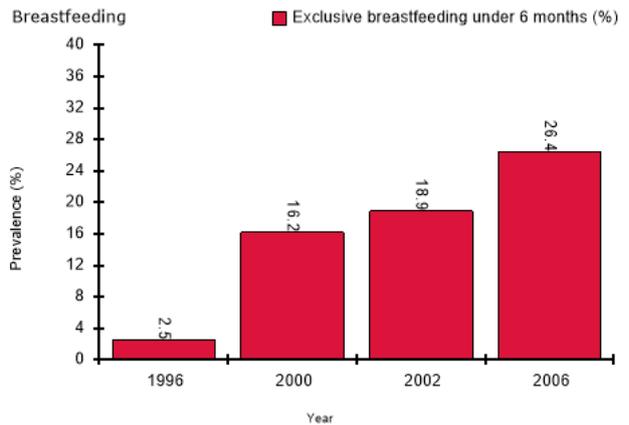
Year Value

Overweight (BMI-for-age >+1 SD) in school-age children and adolescents 5-19 years (%) [?](#) 2016 14.8

Indicator	Tajikistan													
	2015	2014	2013	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002
Children aged 6-59 months who received vitamin A supplementation (%) ⁱ				76.5							46.6			
Children aged < 5 years with pneumonia symptoms taken to a healthcare provider (%) ⁱ				63 ⁱ							64 ⁱ			
Children aged <5 years with ARI symptoms who took antibiotic treatment (%) ⁱ											40.6			
Children aged <5 years with diarrhoea receiving ORT (%) ⁱ				71.6 ⁱ							58.4 ⁱ			
Gross national income per capita (PPP int. \$) ⁱ				2340	2200	2040	1940	1900	1750	1590	1480	1370	1210	1100
Physicians density (per 10 000 population) ⁱ							21.01							
Number of under-five deaths (thousands) ⁱ	9	9	9	9	9	10	10	10	10	11	11	12	13	14
Number of infant deaths (thousands) ⁱ	8	8	8	8	8	8	8	9	9	9	9	10	10	11
Number of neonatal deaths (thousands) ⁱ	4	4	4	4	4	5	5	5	5	5	5	5	5	5
Total density per million population: Computed tomography units ⁱ			1.1 ⁱ			1.31								
Population median age (years) ⁱ			21.7	21.54										
Population living in urban areas (%) ⁱ						26.5								
Hospital beds (per 10 000 population) ⁱ			48 ⁱ	48 ⁱ	49 ⁱ	50 ⁱ	52 ⁱ	53 ⁱ	54 ⁱ	61 ⁱ	59 ⁱ	60 ⁱ	61 ⁱ	63 ⁱ

Caring Practices

Indicator	Year	Value	Source Info
Early initiation of breastfeeding within 1 hour of birth (%) ?	2006	67.1	View
Introduction to solid, semi-solid or soft foods in infants 6-8 months (%) ?	2006	46.6	View
Minimum acceptable diet (MAD) in children 6-23 months (%) ?		no data	
Children with diarrhoea <5 y receiving oral rehydration therapy (ORT) and continued feeding (%) ?	2006	28.0	View



Commitment

Indicator	Year	Value	Source Info
General government expenditure on health as % of total government expenditure ?	2014	6.8	View
Total expenditure on health as % of gross domestic product ?	2014	6.9	View
Per capita total expenditure on health (US\$) ?	2014	185.1	View
Nutrition component of the United Nations Development Assistance Framework (UNDAF) ?		no data	
Nutrition component of Poverty Reduction Strategy Paper (PRSP) ?		no data	
Nutrition Governance score ?		no data	
Maternity leave ?	2013	20 weeks	View
Maternity protection: Compliance with international labour standards ?	2014	Meets three provisions of C183	View
International Code on Marketing of Breast-milk Substitutes: Legal status of the Code ?	2016	Many provisions in law	View

Capacity

Indicator	Year	Value	Source Info
Degree training in nutrition exists ?	2016-2017	Yes	View
Nutrition is part of medical curricula ?	2016-2017	Yes	View
Nutrition professionals density (per 100,000 population) ?	2016-2017	0.0	View
Nursing and midwifery personnel density per 1,000 population ?	2014	4.7	View
GDP per capita (PPP US\$) ?	2014	2,655	View
GDP per capita annual growth rate (%) ?	2014	6.7	View
Official development assistance (ODA) received (net disbursements) (% of GNI) ?	2013	4.5	View
Low-Income Food-Deficit Country (LIFDC) ?	2016	Yes	View

2.3 Uzbekistan Health data

Uzbekistan

Map



This map is an approximation of actual country borders.

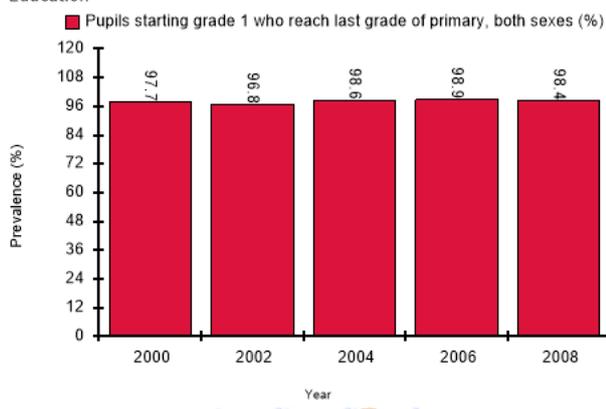
Statistics

Total population (2016)	31,447,000
Gross national income per capita (PPP international \$, 2013)	5,340
Life expectancy at birth m/f (years, 2016)	70/75
Probability of dying under five (per 1 000 live births, 2017)	22
Probability of dying between 15 and 60 years m/f (per 1 000 population, 2016)	167/96
Total expenditure on health per capita (Intl \$, 2014)	340
Total expenditure on health as % of GDP (2014)	5.8

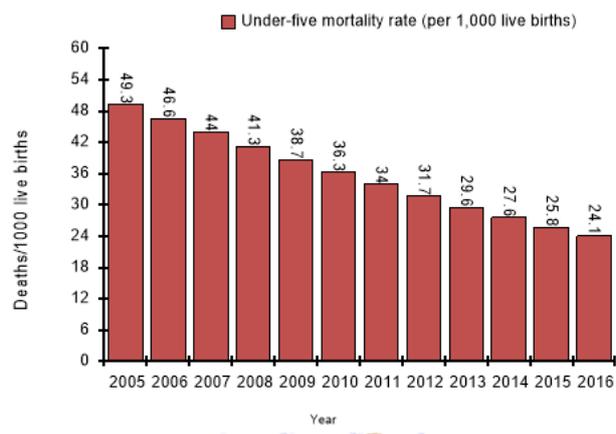
Latest data available from the Global Health Observatory

Education

Education

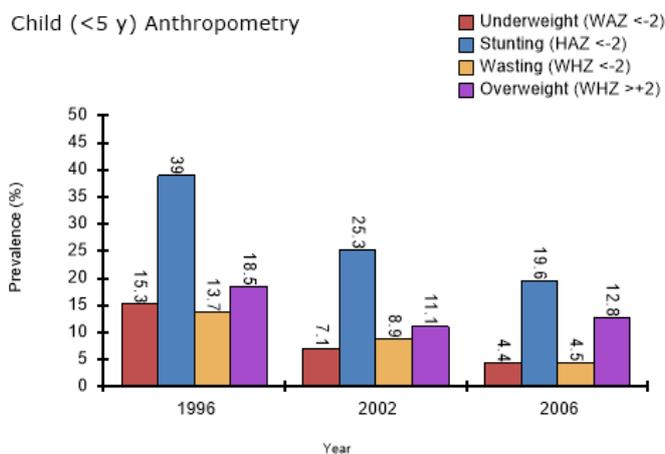


Under 5 Mortality



Child Malnutrition

Child (<5 y) Anthropometry

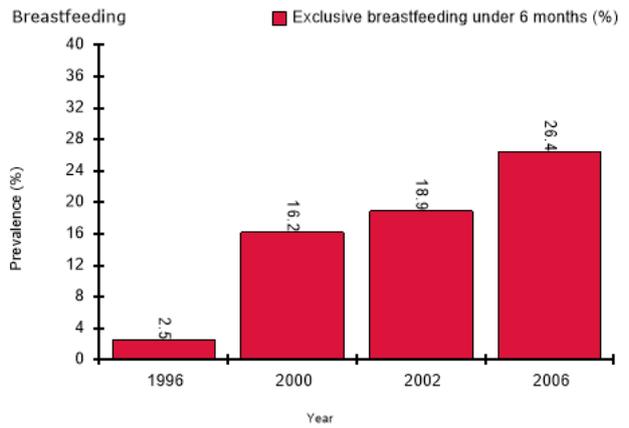


Indicator	Year	Value
Overweight (BMI-for-age >+1 SD) in school-age children and adolescents 5-19 years (%) ?	2016	16.6

Indicator	Uzbekistan													
	2015	2014	2013	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002
Children aged 6-59 months who received vitamin A supplementation (%) ⁱ										72.0				
Children aged < 5 years with pneumonia symptoms taken to a healthcare provider (%) ⁱ										68 ⁱ				
Children aged <5 years with ARI symptoms who took antibiotic treatment (%) ⁱ										55.7				
Children aged <5 years with diarrhoea receiving ORT (%) ⁱ										78.8 ⁱ				
Gross national income per capita (PPP int. \$) ⁱ				4920	4590	4230	3950	3810	3420	2950	2710	2470	2240	2130
Physicians density (per 10 000 population) ⁱ							25.61							
Number of under-five deaths (thousands) ⁱ	17	18	19	21	22	23	24	25	26	27	28	29	30	32
Number of infant deaths (thousands) ⁱ	15	16	17	18	19	20	21	22	22	23	24	24	25	26
Number of neonatal deaths (thousands) ⁱ	9	10	11	11	12	13	13	13	14	14	14	14	14	15
Population median age (years) ⁱ			25.3	24.88										
Population living in urban areas (%) ⁱ						36.2								
Hospital beds (per 10 000 population) ⁱ			40 ⁱ	42 ⁱ	43 ⁱ	44 ⁱ	46 ⁱ	47 ⁱ	48 ⁱ	51 ⁱ	52 ⁱ	53 ⁱ	55 ⁱ	55 ⁱ

Caring Practices

Indicator	Year	Value	Source Info
Early initiation of breastfeeding within 1 hour of birth (%) ?	2006	67.1	View
Introduction to solid, semi-solid or soft foods in infants 6-8 months (%) ?	2006	46.6	View
Minimum acceptable diet (MAD) in children 6-23 months (%) ?		no data	
Children with diarrhoea <5 y receiving oral rehydration therapy (ORT) and continued feeding (%) ?	2006	28.0	View



Commitment

Indicator	Year	Value	Source Info
General government expenditure on health as % of total government expenditure ?	2014	10.7	View
Total expenditure on health as % of gross domestic product ?	2014	5.8	View
Per capita total expenditure on health (US\$) ?	2014	339.6	View
Nutrition component of the United Nations Development Assistance Framework (UNDAF) ?		no data	
Nutrition component of Poverty Reduction Strategy Paper (PRSP) ?		no data	
Nutrition Governance score ?		no data	
International Code on Marketing of Breast-milk Substitutes: Legal status of the Code ?	2016	Few provisions in law	View
Maternity leave ?	2013	18 weeks	View
Maternity protection: Compliance with international labour standards ?	2014	Meets three provisions of C183	View

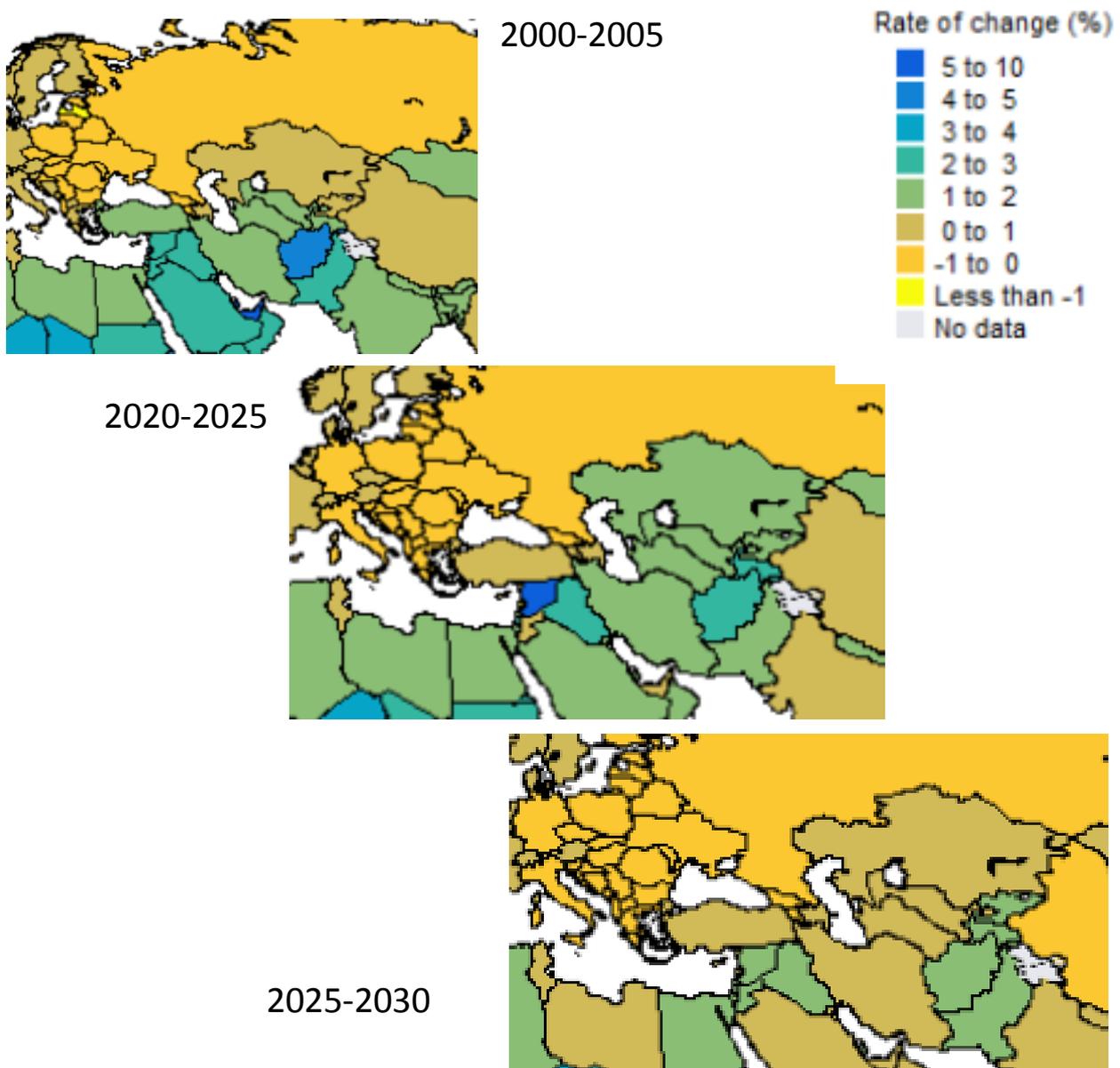
Capacity

Indicator	Year	Value	Source Info
Degree training in nutrition exists ?	2016-2017	Yes	View
Nutrition is part of medical curricula ?	2016-2017	Yes	View
Nutrition professionals density (per 100,000 population) ?	2016-2017	0.2	View
Nursing and midwifery personnel density per 1,000 population ?	2014	11.6	View
GDP per capita (PPP US\$) ?	2014	5,576	View
GDP per capita annual growth rate (%) ?	2014	8.1	View
Official development assistance (ODA) received (net disbursements) (% of GNI) ?	2013	0.5	View
Low-Income Food-Deficit Country (LIFDC) ?	2016	Yes	View

2.4 Comparative Health data

Source: <https://population.un.org/wpp/DataQuery/>

Thematic maps in this page show the average annual rate of population change (%), medium-variant projection, changed from the beginning of this century, with the Kazakhstan at 0-1% change rate, lower than Tajikistan and Uzbekistan, still in the range + 1-2%. In the actual situation the change rate of the population, that can be interpreted as number of new children in a Country, raised again in Kazakhstan to the level of neighboring countries in the range of 1 to 2% yearly increase. In the near future (2025-2030) this rate will decrease in all three Countries, going down to 0 - 1%. This figure is of paramount importance for demographic planning, particularly considering the reducing population in pediatric age. It is the actual and forecasted situation in Europe, with almost all Countries in demographic contraction (average rate from -1 to 0%).



Country	2000 - 2005	2005 - 2010	2010 - 2015	2015 - 2020	2020 - 2025	2025 - 2030
Kazakhstan	32	24	14	8	7	6
Tajikistan	57	39	34	29	24	20
Uzbekistan	49	41	28	21	19	17
Poland	7	6	4	3	3	2
Italy	4	3	3	3	2	2
Germany	4	4	3	3	2	2

Tab. 1 – Infant mortality rate in project Countries, chronological trend 2000-2030

The table shows the Infant Mortality Rate recorded and forecasted in the project Countries by the Department of Economic and Social Affairs, Population Division, United Nations World Population Prospects 2019. It is evident the still striking difference between Europe and Central Asia, where stands out the brilliant performance of Kazakhstan and the still critical situation of the other two Countries.

The same data are graphically expressed in fig. 1, clearly showing the dramatic decrease of the mortality but the still more than evident gap, that ChildCA project would like to help reducing.

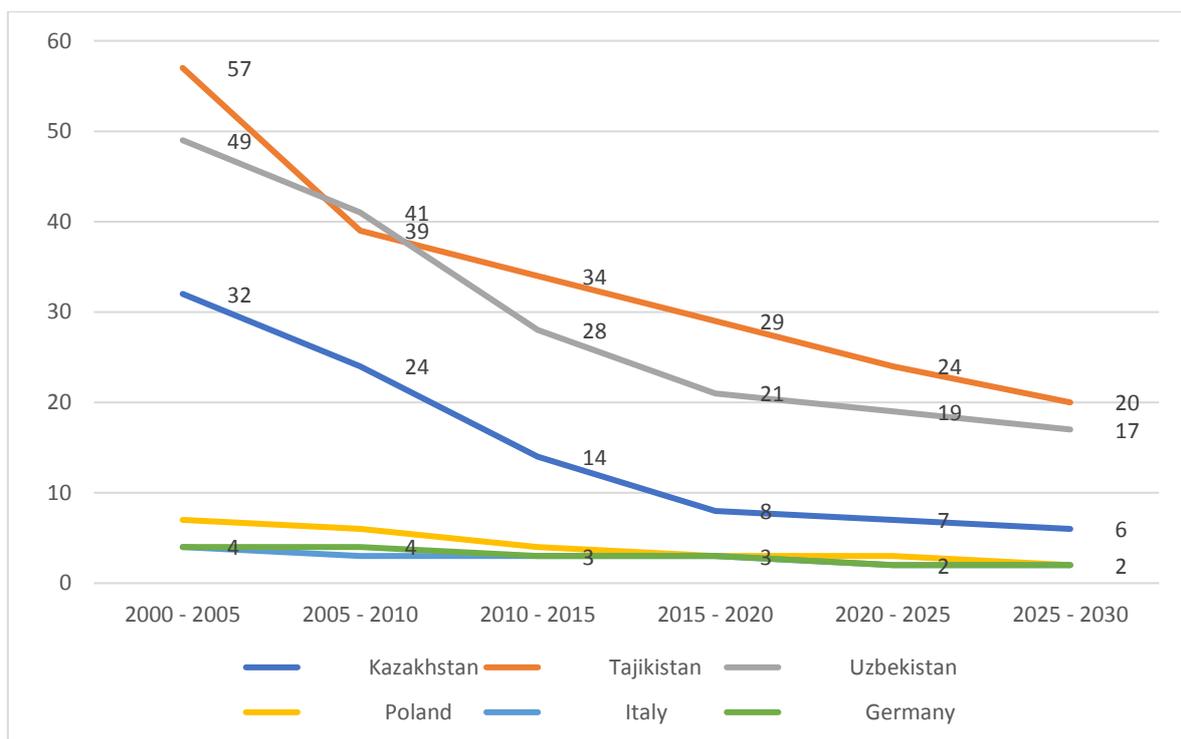


Fig. 1 – Infant mortality rate in project Countries, chronological trend 2000-2030

Tab.2 and 3 present respectively the trend in infant mortality rate and under 5 mortality rate in the last 70 years, from 1950 to 2020, comparing the world figures with those of project countries. In-depth analysis of the tables offers many hints for consideration; we will limit the analysis at under 5 mortality table, but the same considerations apply also for infant mortality table.

United Nations - Population Division - Department of Economic and Social Affairs

World Population Prospects 2019

Infant mortality rate (both sexes combined) by country, 1950-2100 (infant deaths per 1,000 live births)

Estimates, 1950 - 2020

	Infant mortality rate, 1q0, for both sexes combined (infant deaths per 1,000 live births)													
	1950-1955	1955-1960	1960-1965	1965-1970	1970-1975	1975-1980	1980-1985	1985-1990	1990-1995	1995-2000	2000-2005	2005-2010	2010-2015	2015-2020
WORLD	139,6	127,7	120,4	104,1	94,0	84,9	75,3	66,9	62,9	56,9	49,2	41,0	33,9	29,3
Central Asia	124,1	115,4	106,0	97,4	87,8	80,1	73,3	65,3	62,3	56,8	47,1	36,6	26,4	20,6
Kazakhstan	110,2	101,7	93,3	85,0	76,7	68,6	60,2	52,0	50,9	43,5	32,0	23,9	14,1	7,7
Tajikistan	140,8	134,5	125,3	117,2	106,2	96,6	93,3	80,2	84,2	78,6	57,2	39,0	34,1	29,3
Uzbekistan	124,4	114,8	104,6	94,3	84,2	77,8	71,4	64,9	59,4	54,8	49,4	40,7	27,7	20,8
EUROPE	71,6	50,2	37,0	29,6	24,7	21,7	18,2	15,6	12,7	10,3	8,3	6,4	5,3	4,2
Poland	78,9	59,2	49,7	36,4	31,7	27,3	23,7	20,3	16,3	10,1	7,1	5,7	4,4	3,3
Italy	59,1	48,0	40,2	32,5	25,8	17,2	12,4	9,3	7,4	5,5	4,1	3,4	3,0	2,6
Germany	46,4	38,5	30,2	22,6	20,8	15,5	11,1	8,3	6,0	4,8	4,2	3,7	3,4	3,2

Tab. 2 – Infant mortality rate in project Countries, 1950 to 2020



United Nations
Population Division
Department of Economic and Social Affairs

World Population Prospects 2019

Under-five mortality (both sexes combined) by region, subregion and country, 1950-2100 (deaths under age five per 1,000 live births) - estimates 1950-2020

	Under-five mortality, 5q0, for both sexes combined (deaths under age five per 1,000 live births)													
	1950-1955	1955-1960	1960-1965	1965-1970	1970-1975	1975-1980	1980-1985	1985-1990	1990-1995	1995-2000	2000-2005	2005-2010	2010-2015	2015-2020
WORLD	212,7	193,2	181,9	156,3	138,1	124,0	108,9	96,1	90,8	81,9	70,0	57,0	46,4	39,9
Central Asia	162,3	149,7	136,9	125,6	113,7	104,5	95,9	83,7	78,5	72,1	57,4	43,3	31,5	24,5
Kazakhstan	144,3	130,4	117,3	104,9	94,1	84,7	73,9	63,6	60,4	54,0	38,5	27,1	17,5	9,9
Tajikistan	216,3	202,1	185,8	171,0	151,8	135,7	130,2	109,3	115,6	106,8	74,7	49,0	37,9	32,3
Uzbekistan	156,1	145,8	134,8	123,8	112,9	105,5	97,5	85,2	74,1	68,8	58,9	47,9	33,9	25,6
EUROPE	93,4	62,1	43,6	34,6	29,0	25,7	21,8	18,7	15,2	12,4	10,0	7,8	6,3	5,0
Poland	91,6	67,1	55,6	40,9	35,4	30,4	26,4	22,7	18,4	11,6	8,2	6,6	5,1	3,9
Italy	73,3	57,2	46,7	37,0	28,9	19,3	14,1	10,6	8,7	6,5	4,9	4,0	3,6	3,1
Germany	54,7	44,5	35,1	26,7	24,2	18,3	13,3	10,0	7,4	5,8	5,1	4,4	4,0	3,8

Tab. 3 – Under 5 mortality rates in project Countries, 1950 to 2020

It is noteworthy, for example, to verify how the general situation in Central Asia is today like the one registered in Germany in 1970-75, or in the whole Europe in the years 1975-80, or in Poland in the years 1980-85; it took us 40 years to reduce this figure to the actual levels, and it would be of paramount interest to share our experience with partner Countries in order to reach this goal in a much shorter span of time.

Again, of particular interest is to verify the dramatic decrease of under 5 mortality in Poland, in 1950 just a bit less than doubling the one of Germany and today having the very same figure, just a bit higher of the one of Italy that had worse results than Germany until 2000, but in the last 20 years outdoing it.

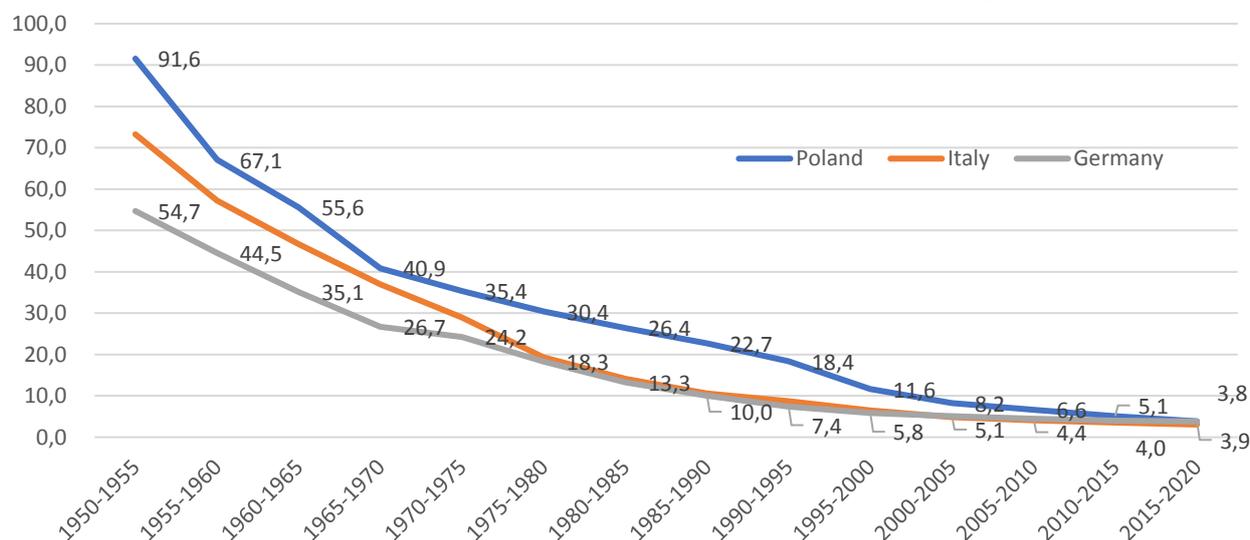


Fig. 2 – Reduction of under 5 mortality rates in Project countries, 1950-2020

Fig. 3 presents the same data for partner Countries. Here also it is interesting to observe how in Tajikistan the well-known political events of 1989-1991 caused an increase in infant mortality, thereafter shortly compensated.

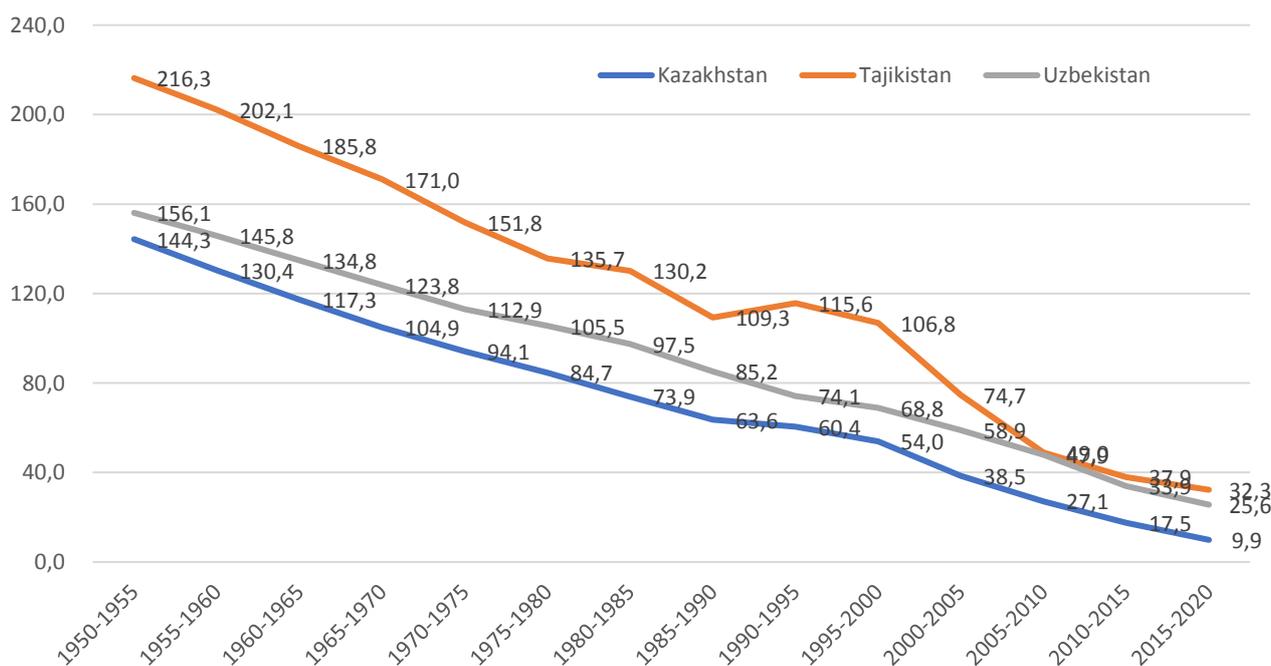


Fig. 3 – Reduction of under 5 mortality rates in partner countries, 1950-2020

Still more interesting is fig. 4, showing the yearly trend in under 5 mortality reduction (in %) in the three Countries.

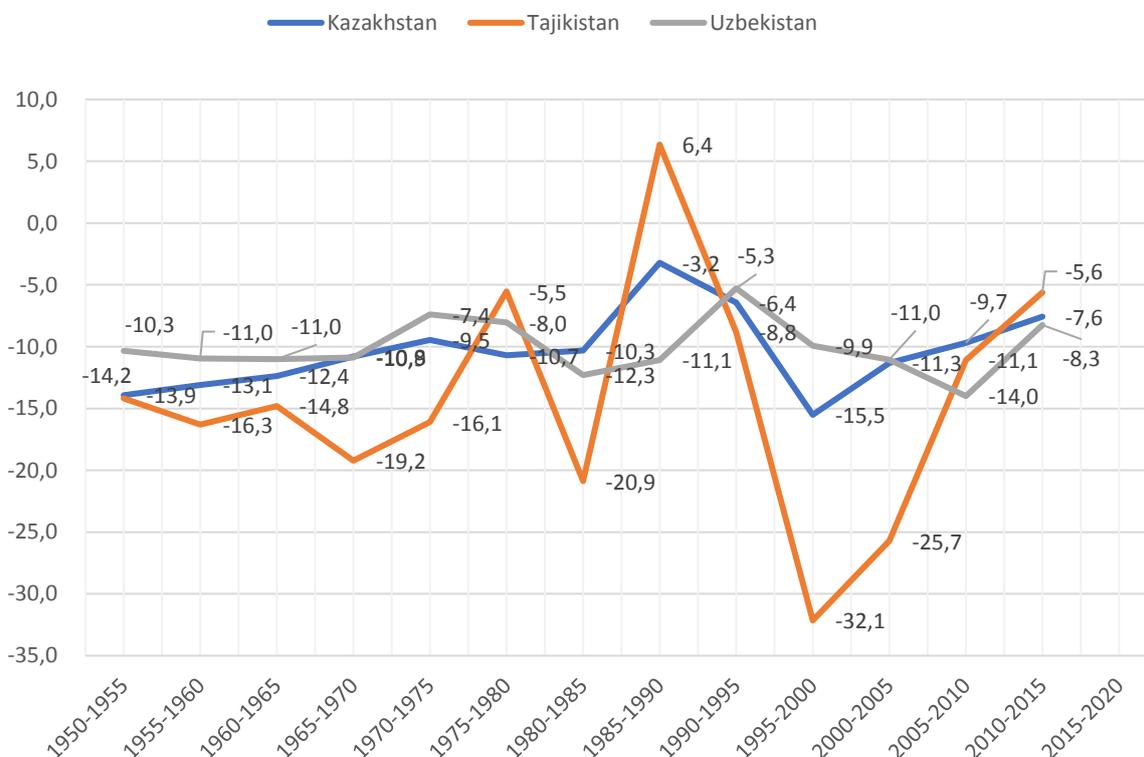


Fig. 4 – Trend in under 5 mortality reduction (in %)

Kazakhstan and Uzbekistan record an average reduction around 10% every five years, in a range from -3,2% to -15,5%. What is rather astonishing are the fluctuations recorded in Tajikistan (possibly due to data recording bias ?), where a spectacular reduction of -20,9% in mortality in the period 1985-90 is followed by a worrying +6,4% in the five years 1990-95 (meaning an increase in under 5 mortality), and then followed, like in a roller coaster, by a still more spectacular reduction of -32,1% in the next five years.

A last striking graphical expression of the differences in infant mortality that ChildCA project would hopefully contribute to reduce is presented in Fig. 5, showing the infant mortality rate expected by UN in 2020.

Tajikistan will equate the world average, being outdistanced by Kazakhstan, approaching on the contrary European levels; its infant mortality rate is expected to be some ten times higher than the one recorded in Italy.

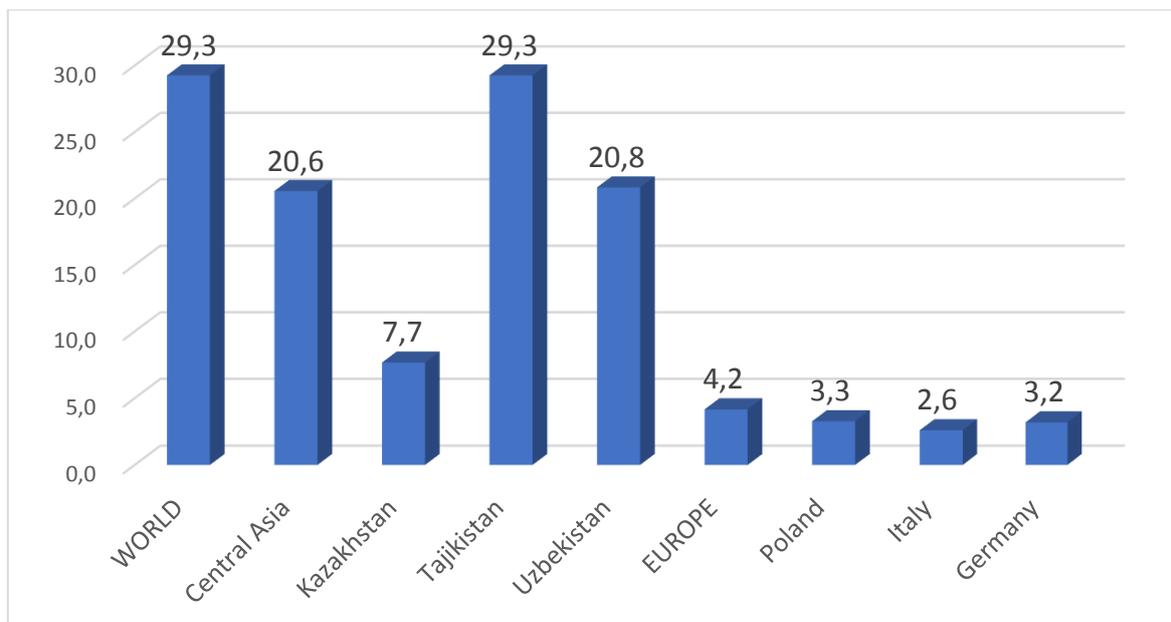


Fig. 5 – Infant mortality rate forecasted for 2020

As a natural consequence of a reduced infant mortality, also the life expectancy at birth will increase; tab. 4 a) and b) schematize the figures calculated and forecasted by the Population Division of the Department of Economic and Social Affairs of UN in the World Population Prospect 2019, covering a span of one century from 1950 to 2050.

	1950 - 1955	1955 - 1960	1960 - 1965	1965 - 1970	1970 - 1975	1975 - 1980	1980 - 1985	1985 - 1990	1990 - 1995	1995 - 2000
Kazakhstan	55,1	57,3	59,5	61,7	63,3	64,3	65,9	67,5	65,5	63,0
Tajikistan	48,2	49,8	51,4	53,0	55,1	56,8	57,5	59,9	57,8	60,1
Uzbekistan	56,1	57,9	59,8	61,6	63,0	64,0	65,3	66,6	66,3	66,7
Poland	61,4	65,9	68,3	69,8	70,3	70,4	70,7	70,7	71,2	72,7
Italy	66,5	68,4	69,7	70,9	72,2	73,6	74,9	76,4	77,5	78,8
Germany	67,5	68,9	70,0	70,7	71,2	72,3	73,7	75,0	76,0	77,3

Tab. 4 a – Life Expectancy at birth in project countries, 1950-2000

	2000 - 2005	2005 - 2010	2010 - 2015	2015 - 2020	2020 - 2025	2025 - 2030	2030 - 2035	2035 - 2040	2040 - 2045	2045 - 2050
Kazakhstan	64,6	66,0	69,1	73,2	73,9	74,6	75,3	75,9	76,6	77,3
Tajikistan	64,1	67,7	69,4	70,8	71,8	72,7	73,5	74,4	75,1	75,9
Uzbekistan	67,7	69,1	70,2	71,5	72,0	72,6	73,1	73,6	74,2	74,7
Poland	74,6	75,6	77,1	78,5	79,3	80,1	80,9	81,7	82,4	83,1
Italy	80,3	81,5	82,4	83,3	84,0	84,7	85,3	85,9	86,5	87,0
Germany	78,6	79,7	80,5	81,1	81,9	82,7	83,4	84,1	84,7	85,3

Tab. 4 b – Life Expectancy at birth in project countries, 2000-2050

Fig. 6 represents graphically the life expectancy at birth in project countries in the 1950, in contemporary years and as expected to be in 2050. Absolute value of expected years of life is encouragingly increasing in all countries, but the differences among them remain the same, with a gap of 10 to 12 years between Central Asia and Europe.

Another good reason to go on with ChildCA project.

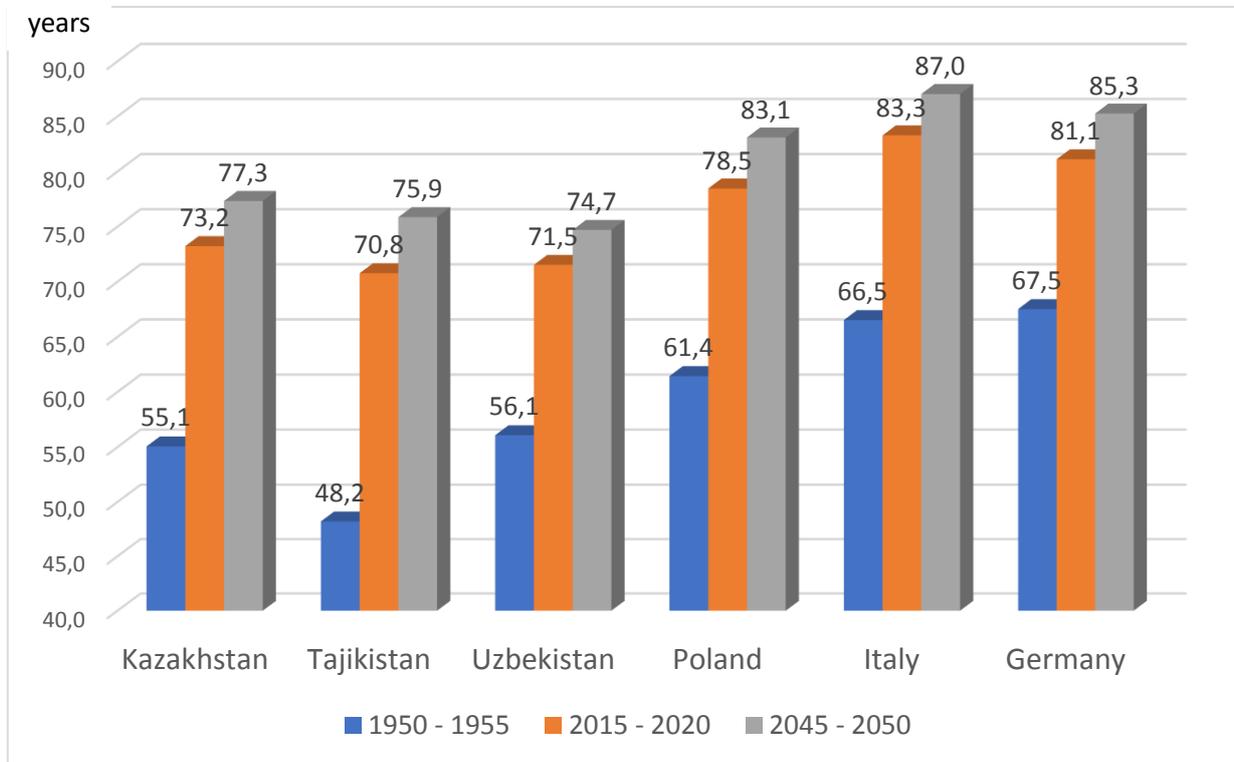


Fig. 6 – Life expectancy at birth in project countries – historical, actual and future evaluation

3 Questionnaire analysis

3.1 General Data

Questionnaire format is presented in appendix 1. Forms collected at 30th November 2019 were 652, with a fairly even distribution among partner Countries as can be seen in fig. 7.

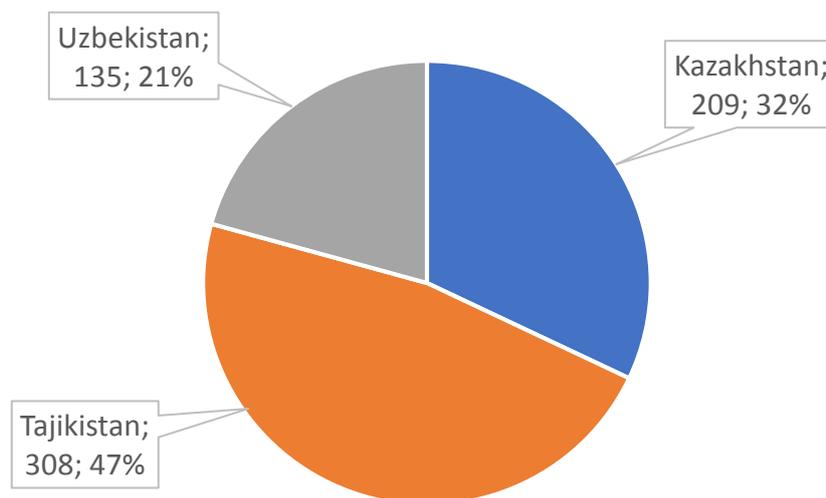


Fig. 7 – Questionnaires received / Country

A possible bias in the questionnaire collection is that a sizeable amount of Tajik answers is a photocopy of each other. This fact could be the result of a duplication in uploading data from the paper forms sometimes utilized – due to the lack of reliable internet connection - or of a shared compilation among Colleagues of the proposed forms. After a thorough evaluation of the problem it has been considered more appropriate not to drop any answer because supposedly a duplication, but to include all of them into the analysis, that must anyway be considered more from a qualitative rather than quantitative point of view.

Again related to an involuntary “selection” of respondents, it must be taken into account the fact that – being the compilation of the questionnaire a completely free exercise, based only on the good will of the consulted people – the reference sample cannot be considered as fully randomized, but there can be biases of various kind (answers given mostly by people fostering changes or, conversely, mostly by people afraid of changes). On first approximation we can consider the various possibilities mutually excluding thus avoiding a selection bias.

A further source of possible misinterpretation is the fact that the questionnaire has been developed according to the European standards, in which Pediatrics is by definition a postgraduate specialization, hence a “student in Pediatrics” is actually a postgraduate resident in Pediatrics; in CA system, where Pediatric Medical Faculty is one of the types of Medical Faculties, the term “pediatrics student” can be applied also to undergraduate and not only to postgraduate students. All possible care has nevertheless been taken to separate undergraduate from postgraduate students.

For the remainder of this analysis and for the sake of possible comparison among countries we will preferably present percentages and not absolute values. This methodology, although not exempted from criticism, has been adopted also because of the wide variability of answers received from respondents of the same Country also for questions supposedly with a single possible result (e.g., the length of undergraduate course in medicine). Of course, this variability can depend from different regulations or habits among different HEI of the same Country.

Answers' analysis has been therefore done calculating the percentages of respondents choosing a particular item among those proposed by the questionnaire (usually regardless of their status of student or fully trained MD or Faculty member) when numerosness of the sample made this method well-founded.

In case of a reduced number of answers (actually many respondents did not fill all required questions), we quoted either a summary of the proposed answers with their total number in brackets: e.g. "bureaucracy (11)" means that 11 respondents gave an answer having "bureaucracy" as keyword. In many instances of answers particularly detailed or relevant we quoted verbatim the answer, reported *"in italics and in quotes"*.

To clearly differentiate objective factual statements from subjective comments, it has been utilized this graphical solution to identify the comments.

Distribution of responders according to their status (Government official, Faculty member, professional, postgraduate student, undergraduate student) is presented in absolute values in tab. 5 and graphically in fig. 8.

status	Kazakhstan	%	Tajikistan	%	Uzbekistan	%	TOTAL	%
Department of Health	10	4,8	6	1,9	7	5,2	23	3,5
Department of Education	3	1,4	4	1,3	9	6,7	16	2,5
Professional association	1	0,5	0	0,0	4	3,0	5	0,8
University – pediatric neurology	2	1,0	3	1,0	11	8,1	16	2,5
University - pediatric surgery	2	1,0	5	1,6	9	6,7	16	2,5
University - pediatrics	22	10,5	47	15,3	37	27,4	106	16,3
pediatric neurologist	1	0,5	11	3,6	0	0,0	12	1,8
pediatric surgeon	0	0,0	10	3,2	2	1,5	12	1,8
pediatrician	15	7,2	142	46,1	5	3,7	162	24,8
Postgraduate student	116	55,5	7	2,3	30	22,2	153	23,5
Undergraduate student	37	17,7	73	23,7	21	15,6	131	20,1
TOTAL	209	100	308	100,0	135	100,0	652	100,0
% on the total	32,1		47,2		20,7		100,0	

Tab. 5 – Questionnaires distribution according to status and Country of the respondents

It has to be noticed how respondents' status distribution – if considered as the total of the three Countries - records a rather even participation of undergraduate and postgraduate students (respectively 20,1% and 23,5%), slightly outnumbered by pediatricians (24,8%) and at the same level with University teachers (21,3% adding up all three specialties). On the other hand, analyzing data subdivided by Country this even distribution is completely upset, with a strong prevalence of postgraduate students in Kazakhstan (55,5%, clashing with the reduced participation of Tajik postgraduate students, just 7 or 2,3% of the total), of pediatricians in Tajikistan (46,1%) and of University teachers in Uzbekistan (42,2%). This uneven distribution possibly reflects different questionnaire distribution strategies in the three Countries, but should not significantly modify the general reliability of the analyzed answers and of the questionnaire as a whole.

Once taken into account this observation, we can observe how sample magnitude and respondents' variety (officials, teachers, students, etc.) allows a fairly reasonable extrapolation of collected answers to the whole national situation.

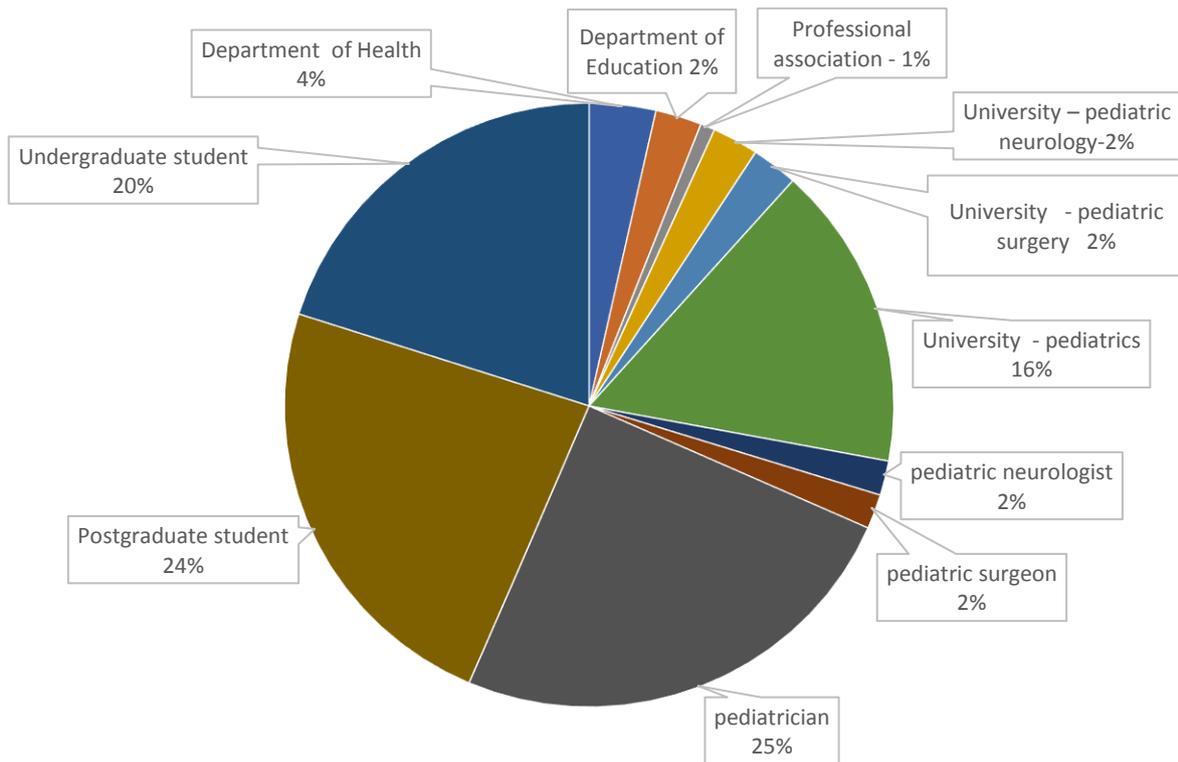


Fig. 8 – Questionnaires distribution according to respondents' status

- 1st and 2nd question refer to the Country and status of the respondents, with data above presented.
- 3rd question: How many years does the course in pediatrics (undergraduate training) lasts?
 - Kazakhstan answers: 10 years (1 respondent); 8 years (3); 7 years (19); 6 years (11); 5 years (100); 4 years (6); 3 years (13); 2 years (49); 1 year (7)
 - Tajikistan answers: 6 years (296 respondents); 5 years (1); 4 years (9); 3 years (2)
 - Uzbekistan: 7 years (3 respondents), 6 years (101), 5 years (2); 4 years (2); 3 years (4); 2 years (4), 1 year (1).
- 4th question: How many years does the pediatrics course (postgraduate education) last?
 - Kazakhstan: 10 years (2 respondents); 9 years (1); 8 years (2); 6 years (3); 5 years (4); 4 years (12); 3 years (24); 2 years (156); 1 year (5).
 - Tajikistan: 6 years (8 respondents); 5 years (2); 4 years (2); 3 years (10); 2 years (272); 1 year (14).
 - Uzbekistan: 5 years (2 respondents); 3 years (83); 2 years (48); 1 year (2).

It is noticeable a curious variability in the given answers, although the majority gives the correct one. Ignoring possible input mistakes, this result shows that there is some confusion in the perception of the actual curricula among the different stakeholders.

➤ 5th question: The course of pediatrics accounts for how many hours of teaching per year?

	Kazakhstan	Tajikistan	Uzbekistan	average
100-150 hours	6,3	16,9	11,8	11,7
150-200 hours	12,5	8,4	24,5	15,1
200-250 hours	25,0	8,1	25,2	19,4
250-300 hours	12,5	5,2	21,5	13,1
> 300 hours	43,7	61,4	17,0	40,7

Tab. 6 – % distribution of answers / Country

This data reflects the variability already noticed before. Of particular interest is the even distribution among possible choices in Uzbekistan, where there is no evident prevalence of the > 300 hours choice like in Kazakhstan and Tajikistan.

➤ 6th question: Practical training (training at the bedside) is (in % of the total time):

For this question is of particular interest a comparison among the different respondents' status. It will be presented for the three Countries in a row (Kazakhstan, Tajikistan and Uzbekistan respectively).

According to undergraduate and postgraduate students, practical training at the bedside involves these percentages of the total training time:

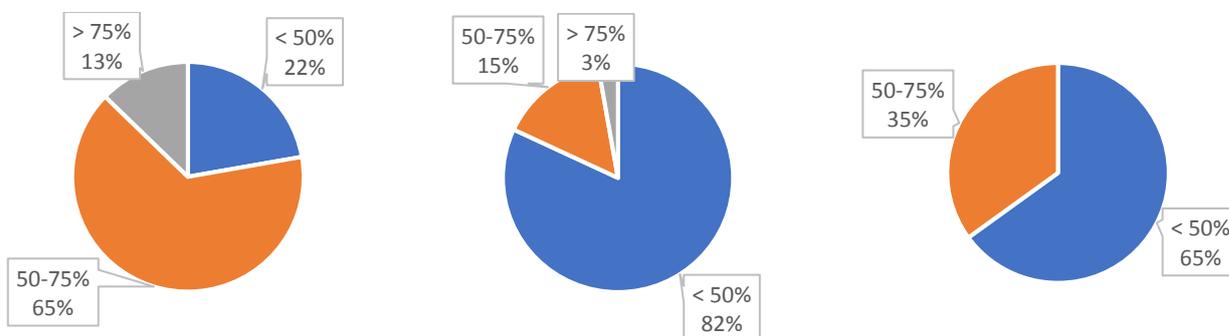


Fig. 9a - % of total training time spent at the bedside according to Kazak, Tajik and Uzbek undergraduate students

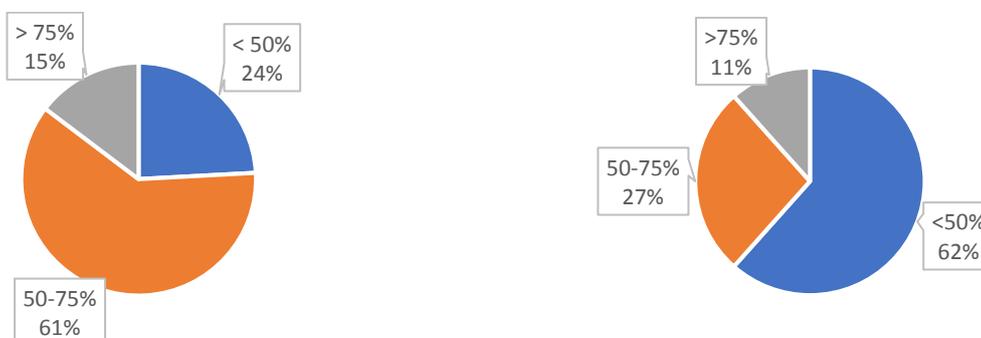


Fig. 9b - % of total training time spent at the bedside according to Kazak and Uzbek postgraduate students

According to fully trained pediatricians, this distribution is as follows:

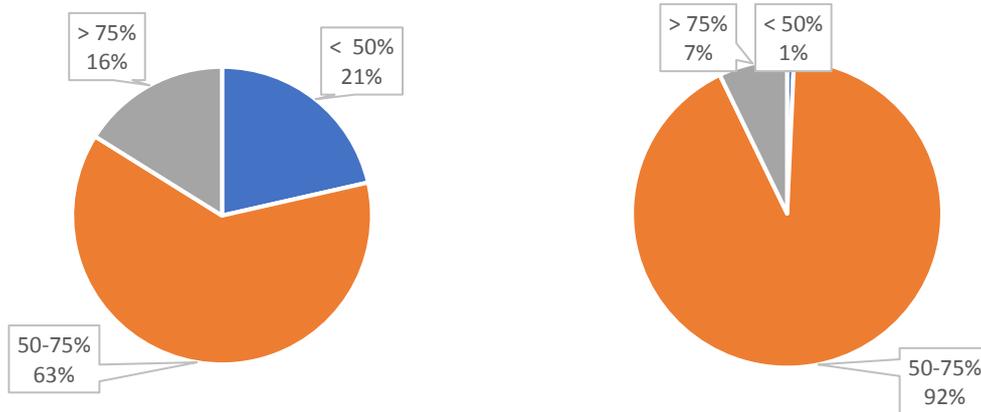


Fig. 9c - % of total training time spent at the bedside according to Kazak (left) and Tajik (right) fully trained pediatricians

According eventually to University teachers, this is the perceived distribution:

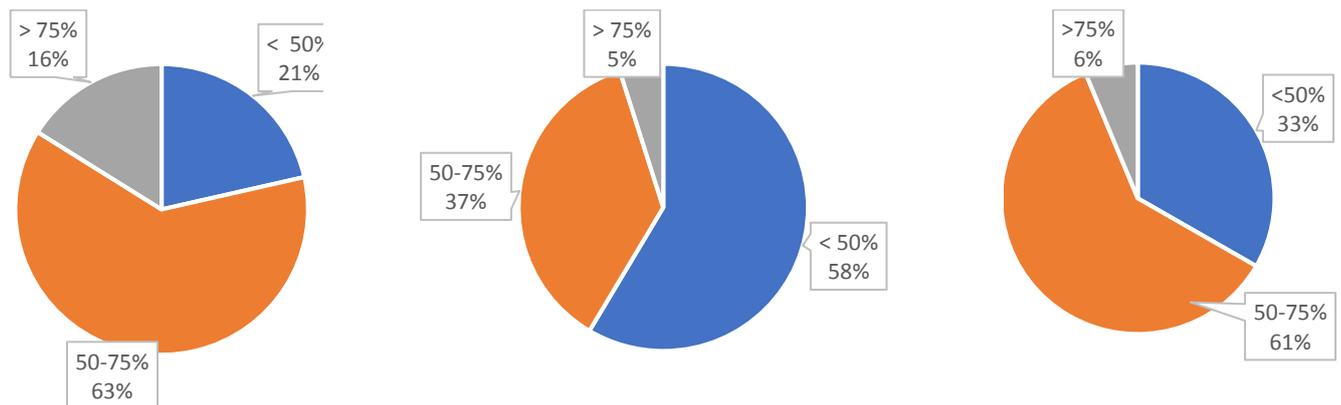


Fig. 9d - % of total training time spent at the bedside according to Kazak, Tajik and Uzbek University teachers

It is interesting to notice how in Tajikistan the perception of time allotted to practical training by University professors is more similar to the one by undergraduate students rather than fully trained pediatricians. On the other hand, it is also evident a structural difference in time allotment between the Countries. It could be worthwhile to speculate a bit on these differences.

➤ 7th question: Education at the bedside is as follows:

This indicator has been evaluated according to the number of students following each tutor during the bedside training. Values are expressed as a percentage of answers for each one of the possible choices.

	Kazakhstan	Tajikistan	Uzbekistan	average
1-2 students	33,0	10,8	16,7	23,8
3-5 students	34,9	28,8	26,7	24,7
> 5 students	32,1	60,4	56,6	51,5

Tab. 7 – Number of students followed by each tutor in bedside teaching.

➤ 8th question: How many doctors train one student in one year:

This indicator has been selected to give a rough indication on the overall size of the teaching staff. Tab. 8 presents the percentage of respondents indicating one of the four proposed choices, subdivided by Country.

	Kazakhstan	Tajikistan	Uzbekistan	average
1-2 doctors	9,6	15,9	16,6	10,8
3-5 doctors	26,8	12,6	30	30,9
6-10 doctors	29,6	25,4	40	32,2
> 10 doctors	34,0	46,1	13,4	26,1

Tab. 8 – total number of doctors training a student in a year.

Data presented in tab. 7 show a substantial overlapping of values coming from Tajikistan and Uzbekistan, while those from Kazakhstan seem to show a higher availability of medical tutors, allowing a lower ratio tutor / student. Trying an analysis of tab. 8 it is possible to notice that for a wide majority of Tajik respondents the total number of students' trainers in this Country is higher than in neighboring ones.

➤ 9th question: Is there any obligatory list of procedures to learn during practical exercises?

Tab. 9 summarizes the % of respondents choosing one of the four possible answers

	Kazakhstan	Tajikistan	Uzbekistan	average
no minimal number	10,5	15,3	0	7,2
less than 5 procedures	44,0	3,9	16,7	13,1
5-10 procedures	15,8	14,6	20	32,4
more than 10 procedures	29,7	66,2	63,3	47,3

Tab. 9 – number of obligatory procedures to learn

Presented data suggest that actually there is a minimum number of procedures to be learnt during the medical course, more probably in the range of < 5 in Kazakhstan and > 10 in the other two countries.

➤ 10th question: How many children are seen by student per year?

This indicator is meant to quantify the exposure of the student to the practical activity. As usual, is presented in terms of % of respondents choosing one of the possible answers.

	Kazakhstan	Tajikistan	Uzbekistan	average
< 25 children	18,7	23,7	13,3	22,7
25-50 children	25,8	9,7	43,3	30,2
50-75 children	30,1	58,7	23,4	31,5
> 75 children	25,4	7,9	20	15,6

Tab. 10 – Number of children seen yearly by a student

According to the relative majority of respondents, the number of children seen yearly by a student is 25 to 50 in Uzbekistan, 50 to 75 in Kazakhstan and Tajikistan.

➤ 11th question: What is the method of student examination?

	Kazakhstan	Tajikistan	Uzbekistan	average
oral exam	17,7	5,5	20	14,8
written exam	4,3	6,8	0	2,3
multiple choice test	44,0	79,3	33,3	60,4
OSCE	34,0	8,4	46,7	22,5

Tab.11 – Adopted methodology for students' examination

It is evident an inclination towards a multiple choice setting for the exam, less evident in Uzbekistan where OSCE seems to be more popular.

➤ 12th question: Can students decide about content of the course?

This indicator is meant to quantify the teaching system flexibility.

	Kazakhstan	Tajikistan	Uzbekistan	average
no	55	92,3	83,4	83,6
less than 10% of the total course time	16,7	1,6	10	8,1
10-20% of the total course time	19,1	5,8	6,6	6,2
more than 20% of the total course time	9,2	0,3	0	2,2

Tab. 12 – Flexibility in courses' content selection

Kazakhstan seems to be the only Country in which a little amount of flexibility in the course contents is allowed.

3.2 Questionnaire - Strengths

Strengths in SWOT analysis⁴ are the attributes within an organization that are considered to be necessary for the ultimate success of a project. Strengths are resources and capabilities that can be used for competitive advantage.

Evaluation of strengths of the actual teaching system in pediatric field in CA has been done in a series of 6 closed + 1 open quantitative questions, offering the possibility to grade the different possible choices, as detailed hereafter. Respondents have then been offered the possibility of answering to three further open questions:

- 1) What is the most valuable feature of the medical training system adopted in your Country you would not change in any way?
- 2) How can you take advantage of the opportunities of opening up, using the experience of European Countries?
- 3) Will the current strengths of the education process continue in the future?

⁴ SWOT analysis (or SWOT matrix) is a strategic planning technique used to help a person or organization identify strengths, weaknesses, opportunities, and threats related to business competition or project planning. https://en.wikipedia.org/wiki/SWOT_analysis

In the following paragraphs we will give for every Country the chart of average values of the quantitative questions, in this occasion stratified by status of respondents, and a commented summary of the qualitative answers, as well stratified by status of respondents.

To simplify the lecture of tables, **highest** and **lowest** values in the average data will be highlighted in this way.

Further deepening of the analysis with the calculation of weighted average related to number of respondents has not been considered mandatory for the scope of this document.

As a last observation it must be noticed that the translation of questionnaires from Russian to English, although supervised by a Russian mother tongue, can shadow some nuances of the text.

3.2.1 Strengths – Kazakhstan

- *What do you consider as particularly effective in the medical training system today adopted in your Country? (1 = not effective at all 10 = very effective)*

Respondents' status	1) The combination of theoretical and practical training	2) Organization of courses	3) Involving students in hospital practice	4) curriculum content	5) integration of pediatric surgery in the general surgical practice	6) integration of childhood neuropsychiatry in the general pediatric practice	respondents' average
Department of Education	8,0	6,5	8,0	6,5	5,5	5,5	6,7
Department of Health	6,0	5,5	6,5	6,5	4,3	4,0	5,5
Professional association	8	7	8	9	9	8	8,2
University – Pediatr. neurology	7,0	6,0	7,0	6,0	6,5	7,0	6,6
University – Pediatr. surgery	8,5	7,5	9,0	7,0	8,5	7,5	8,0
University - Pediatrics	6,8	6,1	6,1	6,5	5,5	5,4	6,1
Pediatrician	6,1	5,9	7,4	6,4	5,8	5,6	6,2
Postgraduate student	6,7	6,6	6,9	6,4	6,3	6,3	6,5
Undergraduate student	7,1	6,7	7,0	7,1	6,8	6,9	6,9
General average	6,8	6,5	6,9	6,6	6,2	6,2	6,5

Tab. 13 – Strengths array – Kazakhstan

Specific observations are related to the need of a more practical approach of teaching: *“Everything is carried out in test mode with little clinical thinking... There is no direct contact with the patient ... More practical skills... Practice in leading medical institutions, and not on the periphery... Child neurology was not taught in practice and theory... freedom of action for students”*. Many respondents emphasize the need of more practical training. A postgraduate student emphasized: *“Shortcomings on organizational issues”*. Interesting also the proposal that: *“Students must be interviewed by a psychologist in order to understand how to handle a patient”* (professional association respondent). *“Taking into account the high birth rate in the Republic of Kazakhstan, increase the number of pediatricians graduated from the University”* (University teacher in Pediatrics respondent).

General average evaluation of the system strengths is interestingly in a short range of marks, going from 6,2 to 6,9: this can be interpreted as a passable overall judgement, definitely positive but without particular enthusiasm. On the contrary the evaluation grade stratified according to the type of responders has a wide variability (from 5,9 to 8,2), unfortunately with no statistical significance due to the very small number of stratified respondents in the two classes (10 and 1, respectively).

- *What is the most valuable feature of the medical training system adopted in your Country you would not change in any way?*

Practical activities have been identified as the most valuable feature by many respondents. In some 15 cases the answer was a negative one, possibly implying that no valuable feature was worth of mention. Still more pessimistic two observations, of a pediatrician: *“Everything was changed for bad”*, and of a postgraduate student: *“We have no valuable features, the system has become obsolete”*.

- *How can you take advantage of the opportunities of opening up, using the experience of European Countries?*

Distance learning through a wider access to the net and to international literature, also with active access to European researches, has been quoted as a possible spin off of the project; a postgraduate student emphasized in detail: *“Use experience with evidence-based medicine, which is not enough in our country”*.

European internships have been suggested as another possible positive consequence of the project; two professors in Pediatrics specified that: *“The experience of Europe should be applied taking into account the characteristics of the local population. All medical training stocks should not be copied”* and *“To improve educational programs with the introduction of innovative approaches and to develop new educational programs oriented to European educational standards”*.

- *Will the current strengths of the education process continue in the future?*

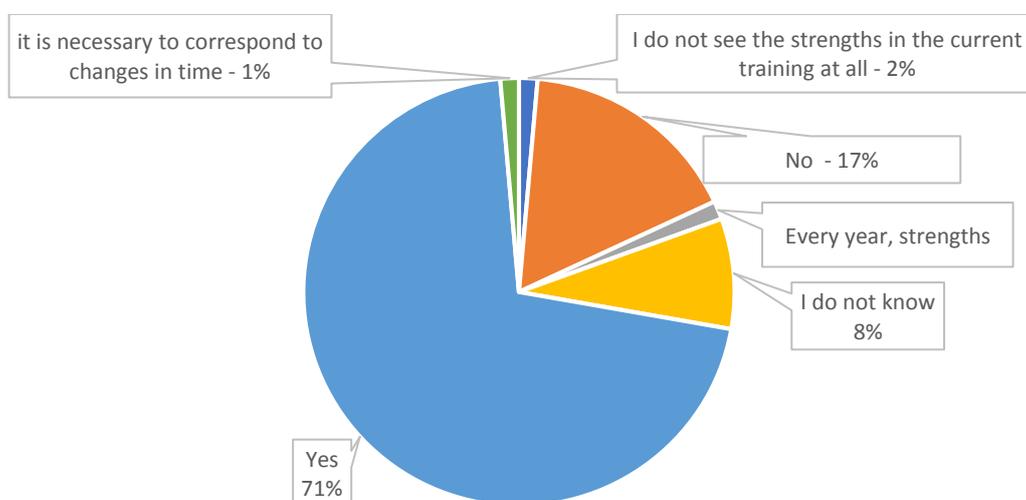


Fig. 10 – Future strengths evaluation

3.2.2 Strengths – Tajikistan

- What do you consider as particularly effective in the medical training system today adopted in your Country?
(1 = not effective at all 10 = very effective)

Respondent's status	1) The combination of theoretical and practical training	2) Organization of courses	3) Involving students in hospital practice	4) curriculum content	5) The integration of pediatric surgery in the general surgical practice	6) The integration of childhood neuropsychiatry in the general pediatric practice	respondents' status average
Department of Education	4,5	4,5	3,8	4,5	3,8	2,8	4,0
Department of Health	6,7	7,3	6	6,7	4,7	4	5,9
University - pediatric neurology	10	10	10	10	10	7,3	9,6
University - pediatric surgery	9,6	9,6	7,6	9,2	7,2	4,6	8,0
University - pediatrics	6,8	6,1	6,5	7,2	4,9	5,6	6,2
pediatric neurologist	10	10	9,9	10	9,5	5	9,1
pediatric surgeon	10	10	10	10	9,6	3,8	8,9
pediatrician	9,9	9,6	9,7	9,4	4,7	2,6	7,7
Postgraduate Student	8	8,9	8,1	8,1	8,6	3,3	7,5
Undergraduate Student	6,5	6,4	6,4	6,9	6,3	5,9	6,4
general average	8,5	8,2	8,2	8,4	5,6	4,1	7,2

Tab. 14 – Strengths array – Tajikistan

The final open column, asking for “Other points of particular strength you would like to mention” offered an interesting array of comments. Summarizing in wide topics what proposed, we find as the most popular comment (~ 26% of the total) the one emphasizing the combination of theory and practice, although is very much requested an improvement in the quality of knowledge. This particular aspect is underlined in ~ 18% of the comments, mostly from undergraduate students, that widely shared the sentence: “There is no opportunity to increase the practical training of students, there are no specialized departments in clinics, equipment and laboratories”. Someone highlighted the need “to use in the classroom the latest technology and video”. Around 5% of the respondents quoted “Continuity learning” (as an asset or as a request?). For sure as an asset AND as a request are ~ 24% of comments emphasizing the opportunities offered by international projects like ours, asking for a greater implementation of such projects in cooperation with other countries and offering to the students the possibility of being introduced into international projects.

Finally, we report here some peculiar comments worth of a specific consideration:

- *"It is necessary to improve deontology, subordination, ethics between the student and the teacher"*
- *"I would like students to read more books of literature in subjects and not taught and crammed tests according to the students we are engaged in cramming"*
- *"Need to improve the level of subordination"*
- *"Pediatric neurology is completely separated from pediatrics and neonatology, there is no continuity"*
- *"Lack of postgraduate education in children's neuropsychiatry"*
- *"We need language training"*

Analysis of the table suggests some interesting observations. Considering the average level of strengths evaluation, expressed in the last column, we can notice how pediatric neurologists and surgeons seems to be the more enthusiastic, with full marks given to almost all indicators. On the contrary, the least satisfied among all respondents are the representatives of the Education and Health Departments, possibly showing a willingness to change a situation perceived as unsatisfactory. Pediatricians and postgraduate students, somewhat sharing a similar professional position, express a rather good level of appreciation of the strengths of the system. It was reasonable to anticipate a rather low level of appreciation expressed by undergraduate students, but curiously this low evaluation is just a bit higher than the one expressed by University teachers in Pediatrics, giving an overall evaluation of the system strengths only slightly above the pass mark.

As far as the particular indicators are concerned, it is evident how the combination of theoretical and practical training, the organization of courses, involving students in hospital practice and curriculum content seem to gather a general agreement, with the exceptions before mentioned.

Integration of pediatric surgery in the general surgical practice is not so much appreciated, and still less the integration of childhood neuropsychiatry in the general pediatric practice (actually the only indicator clearly below the pass mark, with only the intriguing exception of pediatric neurology teachers). This data could possibly support the idea of a better definition of pediatric neurology, actually in Europe fully independent from Pediatrics under the name of Childhood and Adolescent Neuropsychiatry.

Overall evaluation of the system strengths can be marked as rather good, with a mark of 7,2/10.

- *What is the most valuable feature of the medical training system adopted in your Country you would not change in any way?*

Answers from officials of Departments of Health and Education (10 respondents) goes almost all in the direction of keeping the *"Traditional student teaching methods"*, more strongly specified as *"do not touch traditional teaching methods"*.

Comments of University staff (55 respondents) can be roughly subdivided in two groups, that we could define somewhat naively as *"proactive"* or *"retroactive"*. Proactive comments emphasize as particularly effective the integration of theory and practice at the patient's bedside, the continuous professional training and the clinical research methods; a good number of teachers points out the *"Oral student surveys, oral exams"*. *"Retroactive"* comments support the traditional student teaching methods, in four cases clearly defined as *"Soviet methods"*, threatening in a couple of cases: *"Do not argue with the traditional method"* and *"do not touch the previous type of training"*. Another respondent counterposes strongly enough the statement: *"I want to change everything"*.

What is most appreciated by the 163 responding professionals (pediatricians, pediatric surgeons, pediatric neurologists), as well by the 7 postgraduate students, is the *"continuity of learning"* and *"general availability"*. 13 Colleagues emphasize as a valuable feature the connection between theory and practice; 6 of them ask for *"no changes"*, and 2 for *"freedom of choice of specialty"*.

50 of the 73 undergraduate students detailed their answer, and curiously this detail goes only in two directions, each one roughly getting half of the choices: 25 undergraduate students support the traditional teaching methods as a value, while 24 quote *"Oral student surveys, oral exams"*. Only one mentions the *"Practical teaching method"* as a value.

An intriguing observation can be made considering the support of the traditional teaching methods expressed by Officials of the Departments of Education and Health and comparing this support with their low evaluation of the actual system, as expressed with the marks 4,0 and 5,9 (see table above). If the system is not so performing, why to keep it as it is? The same support for the old teaching methods comes from some of the University teachers, but interestingly in a much lower percentage than the one of undergraduate students, seemingly very much attached to the traditional methods (although not quoting *"the Soviet method"* for obvious chronological reasons).

Is instead a bit confusing the second popular observation about the value of *"Oral student surveys, oral exams"*, as well very much shared among teachers and students. This data has to be compared with the one presented in tab. 11 – Adopted methodology for students' examination, showing that in Uzbekistan the most utilized examination method seems to be MCQ, indicated by some 80% of respondents as the method of choice. Is the one of oral exams an emphasized value or a request? Having actually an oral exam rather than MCQ could avoid one of the values mentioned by a sincere undergraduate student, *"discover questions by copying"*.

➤ *How can you take advantage of the opportunities of opening up, using the experience of European Countries?*

"Exchange of knowledge and experience" is among the most quoted perspectives, not only by Faculty members but also from undergraduate students. Another very popular quote is the one related to the continuous introduction of new and advanced medical technologies to improve the quality and accessibility of medical care in the diagnosis and treatment of childhood diseases.

Department of Education and Health officials duly emphasize the need not to have conditions for the use of ongoing European medical experiments and experience, to be freely exchanged.

Faculty members foresee a help for the *"Creation of the Faculty of Pediatrics"*, while pediatric professionals specifically ask for *"meetings and constant exchange of experience in the field of pediatric neurology with European countries"* and for a *"joint development and research in the system of pediatric neurology with EU countries"*. Other expectations worth a specific mention are *"reduction in mortality and improvement in mortality"*, *"the introduction of new training programs in the system of pediatric medicine"*, *"The opportunity for students to study in Europe"*, *"more cooperation with the EU countries in the healthcare system of children's surgery"*, *"participation and organization of meetings and joint work with EU countries"*. Undergraduate students wish for *"Exchange of experience of teachers, advanced training for teachers and doctors"*, and also for *"European study styles and medical experience"* through *"Exchange between countries, sharing experiences"*. From Europe they expect *"language learning"*, *"Sharing experience"*, *"skills development"*, and propose what already planned in the project: *"there are programs in the internet with which we could do this; there we would exchange experience"*.

One rather pessimistic comment (*"I don't know, nobody participated in EU projects"*) is counterbalanced by a more pragmatic *"I don't understand, until I know"* and an optimistic *"I hope with the help of this project"* and *"introducing this project into practice"*.

A common feature of almost all answers is a high expectation of what could come from an interaction with European partners. It is of particular interest to record this desire of interaction, and therefore innovation, in comparison with the repeated call for keeping alive the traditional system. Can we see behind this seemingly contradictory data the wish for a new way and the fear to enter it? *"Who leaves the old way for the new one, knows what he leaves and doesn't know what he will find"* says an old Italian proverb, not so sure if wise or simply coward...

➤ *Will the current strengths of the education process continue in the future?*

Of the 279 answers given to this question, 253 (90,6%) are positive for sure or as a hope; in 5 cases (2 teachers and 3 students) it is reemphasized that the answer is positive because the traditional teaching system is more effective.

Negative answers are 18 (6,4%); four of them specify that this negative outlook is due to the possible introduction of a credit system.

Fig. 11 gives the graphical representation of the answers, including 8 “don’t know” (3%).

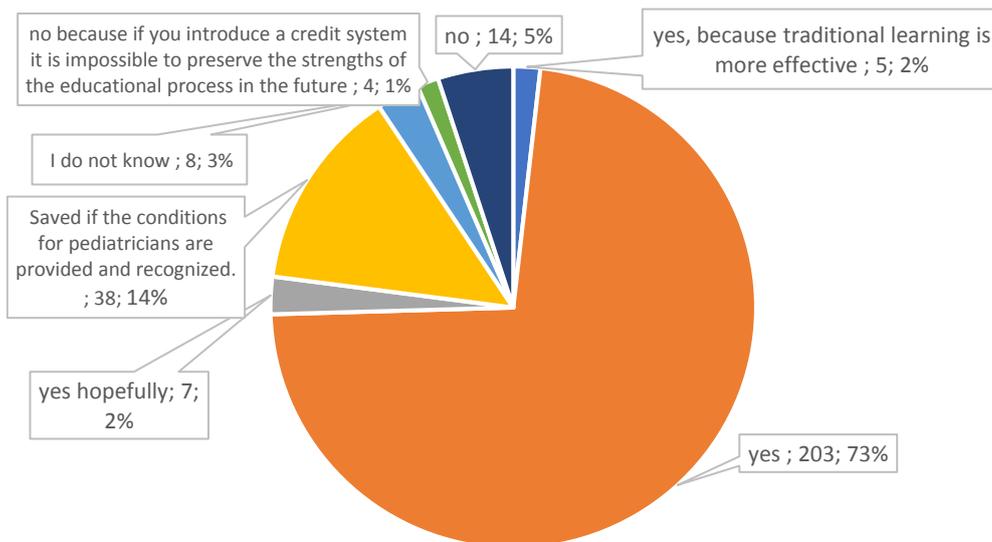


Fig. 11 – Evaluation of the possibility for the current education process to continue in the future

3.2.3 Strengths – Uzbekistan

- *What do you consider as particularly effective in the medical training system today adopted in your Country? (1 = not effective at all 10 = very effective)*

Respondents' status	1) The combination of theoretical and practical training	2) Organization of courses	3) Involving students in hospital practice	4) curriculum content	5) The integration of pediatric surgery in the general surgical	6) The integration of childhood neuropsychiatry in the general pediatric	respondents' average
Department of Education	8,7	8,4	6,1	8,3	5,3	7,3	7,4
Department of Health	6,4	6,9	6,4	7,1	5,6	5,9	6,4
Professional association	7,5	8,5	8,0	7,0	5,0	6,5	7,1
University - Pediatric Neurology	6,9	8,0	5,7	7,9	6,1	7,3	7,0
University - Pediatric Surgery	7,7	8,2	7,7	7,4	7,0	6,7	7,4
University - Pediatrics	7,1	6,9	6,9	6,6	6,5	5,9	6,7
Pediatric surgeon	3,0	3,0	3,0	3,0	10,0	5,0	(4,5)
Pediatrician	7,6	7,4	8,8	8,2	7,8	7,8	7,9
Postgraduate student	6,0	5,9	6,4	6,0	5,8	5,8	6,0
Undergraduate Student	7,6	7,7	7,2	7,2	7,2	7,3	7,3
general average	7,0	7,1	6,8	6,9	6,4	6,4	6,7

Tab. 15 – Strengths array - Uzbekistan

In the column asking for “Other points of particular strength you would like to mention” are given answers recalling more a wish for the future rather than an actual strength of the system, except for a University teacher praising the “strict discipline”, another one observing that “things are good” and a Department of Health representative underlying the “program versatility”. As a wish for the future, worth of mention are the pleas for a “Support for reforms in medical education by the Government... Flexibility in changing curricula and programs... Increase the hours of practical training.” Two more respondents ask for minimally invasive diagnostic and new learning methods; one each wishing “Advice and introduction of foreign experts” but denouncing “Lack of foreign literature, evidence-based medicine” as well as “Lack of electronic document management in a medical institution”.

Other comments to be intended more as weaknesses of the system are the complains coming from the Dept. of Health: *"The student does not see the patient, although at the basic level and while attending the clinics, he has no access even to the teacher !!!!"*; from a postgraduate student: *"For money, or if you are the son or daughter of someone famous doctor or teacher, then everything is open to you. Especially not to attend lectures. And the contracts [to attend postgraduate schools] are expensive"*. The strength for a pediatrician consists in *"have your own clinic"*; another postgraduate student wishes for *"The quality of training must be consistent with the European standard"*.

Organization of courses seems to have the higher evaluation, while integration of subspecialties in the general core pediatric teaching seems not to collect respondents' favor. Among them, pediatricians are the more positive, postgraduate students the more pessimistic (no statistical validity for pediatric surgeons' answers). Some underlying criticalities, such as corruption and basic professional training, emerge continuously also while detailing strengths of the system.

- *What is the most valuable feature of the medical training system adopted in your Country you would not change in any way?*

A respondent from the Dept. of Education gave a detailed description of these features: *"Regarding undergraduate education: Compulsory attendance of classes with the practice of missed hours and topics. The necessary presence of a morgue and the study of anatomy on corpses. Monitoring students' knowledge in writing and necessarily verbally with a demonstration of practical skills. In postgraduate education: training in the work of clinical residents in the specialized department under the guidance of professors, associate professors or highly qualified doctors."*

Pediatrics teachers recalled as valuable features: *"Discipline... More time at bedside... The development of intuition and logical thinking... Succession, from simple to complex... Consultation of experienced pediatricians... Theory 50% + practice 50%"*.

Postgraduate students share the opinion of a University teacher: *"it's time to completely change the system...It is necessary to change everything... You need to change a lot... Seminars conducted on new teaching technologies of learning "*; another one shouts: *"I want to change everything at our institute!"*.

- *How can you take advantage of the opportunities of opening up, using the experience of European Countries?*

Department of Education: *"Study the education system, make appropriate changes to curricula and teaching methods. Learn modular experience of learning... integration of medical English into the educational process"*.

University teachers: *"Improvement of advisory skills of future specialists, general skills with patients based on modern requirements for specialists... Theoretical courses and practical skills... Continuing education course on minimally invasive technologies... Improving consultative skills of future specialists, communication skills with patients based on modern requirements for specialists"*.

Postgraduate students: *"I would like to learn all the innovations in pediatrics and integrate it into our healthcare system... Experience, guides, access to articles... online learning... Government organized programs for free examination of children!"*.

Among the most quoted opportunities are: access to foreign literature and to evidence-based medicine, creation of simulation centers, academic exchanges via video conferencing, implementation of standards and protocols.

➤ Will the current strengths of the education process continue in the future?

27 yes, 4 no, 5 do not know. Two positive answers add rather optimistic comments: “With the advent of new technologies in the educational process, our current strengths are improving in our country, I hope in the future it will be even better” and “Yes, we will make this process even stronger in the future by drawing on the experience of European countries”. Let’s hope for the best...

3.2.4 Strengths – Country comparison

Country	1) The combination of theoretical and practical training	2) Organization of courses	3) Involving students in hospital practice	4) curriculum content	5) The integration of pediatric surgery in the general surgical practice	6) The integration of childhood neuropsychiatry in the general pediatric practice	respondents' average
Kazakhstan	6,8	6,5	6,9	6,6	6,2	6,2	6,5
Tajikistan	8,5	8,2	8,2	8,4	5,6	4,1	7,2
Uzbekistan	7,0	7,1	6,8	6,9	6,4	6,4	6,7
General average	7,4	7,3	7,3	7,3	6,1	5,6	6,8

Tab. 16 – Strengths Country comparison

3.3 Questionnaire – Weaknesses

Weaknesses in SWOT analysis are the factors that could prevent successful results within a project.

Evaluation of weaknesses of the actual teaching system in pediatric field in CA has been done in a series of 11 closed + 1 open quantitative questions, offering the possibility to grade the different possible choices, with this specific question: “What do you consider as the most critical problems in the medical training system today adopted in your Country? (1 = not relevant 10 = very much relevant).

Respondents have then been offered the possibility of answering to two further open questions:

- 1) Which are the most critical features of the medical training system adopted in your Country you would possibly change?
- 2) What weaknesses in the education system can interfere with its successful implementation?

Data are presented in the same way used for Strengths; it must however be kept in mind that in tab. 17 the highest the mark (thus highlighted) marks the worse and the lowest the better opinion on a critical feature of the system.

3.3.1 Weaknesses - Kazakhstan

Respondent's status	1) The separation of pediatric training from general medical training	2) The lack of proper postgraduate training in pediatric subspecialties	3) An excessively theoretical content of curriculum	4) The lack of simulation-based training	5) The lack of interaction with medical schools abroad	6) The lack of training in interaction among colleagues	7) The lack of training in international medical literature consultation	8) Lack of training in the diagnostic centers for newborns	9) Lack of student involvement in pediatric studies	10) The lack of access to evidence-based medicine	11) The lack of foreign languages knowledge	respondents' average
Department of Education	5,5	6,0	4,5	4,0	5,0	7,0	6,5	7,0	4,5	6,0	4,5	5,5
Department of Health	6,3	5,3	6,0	5,3	5,0	6,8	6,8	5,8	5,8	6,5	4,3	5,8
Professional association	10	10	7	10	10	10	8	8	10	8	10	9,2
University – Pediatr.neurology	6,5	7,0	7,0	6,5	6,5	6,0	5,5	5,0	6,5	5,5	5,0	6,1
University – Pediatr.surgery	8	8	8	8	8	8	8	8	8	8	8	8,0
University - Pediatrics	5,7	6,6	5,9	6,6	6,1	6,0	6,0	5,5	6,0	6,0	6,3	6,1
Pediatrician	7,3	7,6	7,6	7,1	7,4	7,3	7,1	6,9	7,6	6,6	7,9	7,3
Postgraduate student	6,7	6,7	6,5	6,5	6,8	6,2	6,5	6,3	6,5	6,3	6,5	6,5
Undergraduate student	6,4	6,6	6,8	6,7	6,8	6,8	6,8	7,1	7,1	6,9	6,7	6,8
general average	6,6	6,7	6,5	6,6	6,7	6,4	6,5	6,4	6,6	6,4	6,5	6,5

Tab. 17 – Weaknesses array – Kazakhstan

About the open question asking for any further weakness, two postgraduate students answered in detail: “Lack of allocated grants / finances for: 1) obtaining a higher medical education / postgraduate specialized education; 2) scientific grants in the field of medicine; 3) on field practices for the exchange of experience in foreign countries; 4) to equip scientific / clinical centers. Frequent change of standards / leadership in the education system.... Lack of internship and study abroad opportunities, exchange programs”.

A teaching staff in Pediatrics suggested to increase 2 more years the undergraduate study in Pediatrics, although a colleague emphasized a big pediatric load charge; a third one underlined the need for study of pathogenesis disease.

As a general overview, the professional association respondent is the more critical of the actual system, with an overall mark of 9,2 over 10 (being 10 the worse); on the contrary the most benevolent evaluation comes from the Department of Health, with an overall mark of 5,4 meaning that the system is judged just a bit critical.

Evaluating now the specific questions, it is possible to observe as *“an excessively theoretical content of curriculum”* is considered the least problematic criticality (6,4/10), ex aequo with the lack of training in the diagnostic centers for newborns and lack of access to evidence-based medicine, while the more problematic is considered the lack of proper postgraduate training in pediatric subspecialties, at the same level with the lack of interaction with medical schools abroad (6,7/10).

The worst and the best evaluation are condensed in a very narrow range (0,3 points in total, 6,4 vs 6,7), meaning a rather even evaluation of all weaknesses.

It is interesting to notice the suggestion to increase 2 years the undergraduate studies in Pediatrics, instead of proposing a longer postgraduate period: this choice could express a sort of a subliminal difficulty to get out of an established scheme, having for granted some key point such as the duplication of medical faculty in “adult” and “pediatric” faculty, a duplication completely unknown outside the post-Soviet world.

According to one annotator of this document, since this academic year - in order to effectively develop practical skills - field practice has been introduced in the countryside for first year students, during which residents work with direct advice and constant monitoring by experienced practitioners (clinical mentors) in practical health care. In the second year of study, residents also complete clinical practice for 6 months.

About this new organization of the study another critical comment was advanced: *“There is no doubt that, first of all, resident training is of a clinical nature, which implies training at the patient's bedside. Indeed, in recent years, practical training of residents and interns at the patient's bedside has been introduced, taking into account new strategic regulations in the field of medical education. Active in this process is coordinating University of KazNMU, which sends to the field practice in regions of the country remote from megacities. But the quality of this approach is still doubtful, due to the fact that it is a medical institution at the district level, where the level of medical care is not the highest. Therefore, it is not always possible to acquire the necessary specialized practical skill. Therefore, in our opinion, practical training of residents in specialized centers and clinics where high-tech types of diagnostics and treatment is carried out is advisable. It is also desirable to ensure the integration of clinical activity with the conduct of medical research, possibly in children's medical institutions and primary care organizations, in accordance with the priority areas of scientific research, in which students of the residency are involved, taking into account their interest. Experienced medical practitioners who play the role of clinical mentors are connected to the educational program”*.

A further comment on this issue received through the National Coordinator is the following: *“In the residency, the educational process is aimed at clinical practice at the bedside of the patient. For a better development of practical skills, field practice has been introduced in regions where experienced medical practitioners play the role of clinical mentors. In addition, residency education is fully funded by the state, residents at the same time have the opportunity to earn from additional duties. Important sections of pediatrics such as Neonatology and Children's Infectious Diseases are part of the curriculum for training residents. Possibly, the insufficient mastery of the final results of training by residents is associated with a two-year duration of training instead of a four-year basic residency according to European standards. In recent years, non-traditional teaching methods with many interactive approaches have begun to be introduced in Kazakhstani medical universities. Disciplines such as evidence-based medicine, communication skills, medical statistics are widely introduced in the curriculum”*.

About possibilities of study abroad, a comment was related to the availability in the Country of the Bolashak Programme (the Bolashak International Scholarship – being “Bolashak” the kazak word for “Future”), a scholarship which is awarded to high-performing students to study overseas all-expenses paid, provided that they return to Kazakhstan to work for at least five years after graduation. Since its implementation in 1993, more than 10.000 students have been awarded the scholarship. The same annotator underlined that grants and additional sources of funding for research projects and internships are constantly being allocated: possibly they are not enough known in the Country.

- *Which are the most critical features of the medical training system adopted in your Country you would possibly change?*

This question raised quite an interesting set of contradictory answers. To a postgraduate student saying that “everything” has to change, a pediatrician answers “everything is fine”; Dept. of Health wishes for “from the first course of study to practice in PHC and hospitals”, the same a Pediatrics teacher “Targeted pediatric subjects from the 1st year” to whom a postgraduate student replies “no training during the first years of education”; “Pediatrics Department in all medical schools” vs “Separate pediatrics from general medicine” and “more training in pediatrics” (7 respondents, under- and postgraduate students) vs a “no more training” (Dept. of Health) and “lack of practice, non-participation in international research projects” (University-pediatrics). The proposal of University teacher “improve distance learning” clashes with a postgraduate student suggesting to “Cancel all types of distance learning in the medical field. Return to the system of employment of ready-made specialists to the regions”.

Is rather difficult to sort out a common strategy from these conflicting suggestions, that anyway share the willingness to change the education system / process introducing “in-depth study of pediatrics and pediatric surgery”, with the “integration of new aspects of medicine” and overcoming the “inadequate use and interpretation of diagnostics” and “lack of sufficient practice”. A fully trained pediatrician, possibly recalling his studies, asks for “More attention to students, more training with a teacher at the patient's bedside, unfortunately, current teachers are afraid of the clinic and are more occupied with their private things as publication of monographs, articles, foreign trips etc.”.

- *What weaknesses in the education system can interfere with its successful implementation?*

The quoted features include as a frontline the lack of suitable practice (6 respondents, one detailing: “Studying for a long time, little training and no practice”, contrasted by a “reduction of theory, few libraries”), corruption (4), lack of knowledge of English (3), lack of financing (2), lack of personnel (2), old fashioned views (2), and 1 each for: test exams, too many students, bureaucracy, lack of technology, programs constantly changing, regulatory imperfection, teachers do not teach, untimely adoption of regulatory documents.

3.3.2 Weaknesses - Tajikistan

- *What do you consider as the most critical problems in the medical training system today adopted in your Country? (1 = not relevant 10 = very much relevant).*

A first general overview of the results shows an evaluation of weaknesses as rather relevant (7 over 10, being 10 the worst mark). Most critical of the actual situation are University teachers in Pediatrics, the least their colleagues in Pediatric Surgery (47 vs 5 respondents). Immediately following as more critical respondents are pediatricians and undergraduate students, while the 10 representatives of Departments of Education and Health seem to be the less severe in this evaluation of system weaknesses.

Respondents' status	1) The separation of pediatric training from general medical training	2) The lack of proper postgraduate training in pediatric subspecialties	3) An excessively theoretical content of curriculum	4) The lack of simulation-based training	5) The lack of interaction with medical schools abroad	6) The lack of training in interaction among colleagues	7) The lack of training in international medical literature consultation	8) Lack of training in the diagnostic centers for newborns	9) Lack of student involvement in pediatric	10) The lack of access to evidence-based medicine	11) The lack of foreign languages knowledge	respondents' average
Department of Education	6,3	2,5	5,3	5,0	4,3	5,3	6,5	4,3	6,3	5,8	4,5	5,1
Department of Health	6,7	4,7	7,8	2,5	6,0	4,0	8,0	4,0	5,2	4,0	8,7	5,6
University - pediatric neurology	1,0	1,0	1,0	9,7	10,0	1,0	9,7	1,0	10,0	10,0	10,0	5,8
University - pediatric surgery	4,2	3,0	3,2	5,2	6,4	1,4	7,2	4,6	6,8	7,0	6,2	5,0
University - Pediatrics	5,1	6,7	6,1	7,6	8,8	6,6	8,0	7,5	7,9	8,1	8,3	7,3
pediatric neurologist	1,0	1,1	2,3	9,2	8,9	1,8	8,9	5,3	9,1	9,7	9,8	6,1
pediatric surgeon	1,0	1,0	1,0	8,5	9,9	1,0	9,6	2,3	9,5	8,8	9,8	5,7
pediatrician	7,1	7,3	7,2	8,2	8,5	6,4	8,2	3,9	6,5	7,7	7,5	7,1
Postgraduate student	3,7	2,6	3,0	8,1	8,4	3,0	8,9	6,3	8,3	8,9	9,0	6,4
Undergraduate Student	6,8	7,2	7,5	6,8	7,1	7,3	7,2	7,3	7,4	7,0	7,8	7,2
general average	6,1	6,4	6,5	7,6	8,1	6,0	8,0	5,3	7,1	7,7	7,9	7,0

Tab. 18 – Weaknesses array – Tajikistan

Analyzing the specific voices of possible criticalities, the *separation of pediatric training from general medical training* does not seem to be a problem for University teachers nor for postgraduate students, while sees Pediatricians as the most critical (7,1 / 10), followed by undergraduate students.

The *lack of proper postgraduate training in pediatric subspecialties* is considered a bit more critical (6,4/10), again with pediatricians together with Pediatrics teachers as the most critical (7,3 and 6,7 respectively), while the Department of Education doesn't see any problem about this issue (2,5).

Content of curriculum is considered as *excessively theoretical* by many respondents (6,5/10), having Department of Health as the most severe reviewer (7,8), followed by pediatricians (7,2).

The *lack of simulation-based training* is felt like a quite important problem (7,6), having pediatric neurologists both teachers and professionals as the most severely critical ones (9,7 and 9,2 / 10, near to the maximum). This issue is conversely not a problem for the Department of Health.

The most important criticality is considered to be the *lack of interaction with medical schools abroad*, with an average mark of 8,1 going up to a full 10/10 for the 3 Pediatric Neurology teachers interviewed. Least severe are the departments of Education and Health.

The *lack of training in interaction among colleagues* does not seem to be a huge problem (6/10) if not for undergraduate students (7,3), while *the lack of training in international medical literature consultation* is ranked second among the most critical weaknesses of the system (8/10), with the students being the least concerned by that, at the same range of pediatric surgeons (7,2).

Lack of training in the diagnostic centers for newborns is in general considered the less problematic weakness (5,3/10) by all respondents but undergraduate students (7,3), possibly the most interested in being trained in this topic.

The gravity of *lack of student involvement in pediatric studies* is variously evaluated by different respondents, with a general evaluation of 7,1/10.

The *lack of access to evidence-based medicine* and the *lack of foreign languages knowledge* rank respectively as fourth and third most critical weakness (7,7 and 7,9 respectively), with the lower marks by the Department of Education (5,8 and 4,5) and a mark below the average given by undergraduate students.

Among the open answer section, asking for any other criticality to report, the one more often quoted (46 instances, 20% of the 222 respondents to this particular question) is "*lack of interest*" pointed out mostly by pediatricians, specifying in two cases "*Passivity of the young doctors themselves*" and "*not responsible attitude to work*".

Second most mentioned group of criticalities (33 instances, 14,9%) is the one related to the lack of sufficient equipment, intended both as medical equipment and teaching equipment (lack of the latest innovative technologies, lack of electronic boards to conduct lessons, etc.)

Following weakness is an inadequate knowledge of foreign languages (24 instances, 10,8%), curiously including as such not only English but also Latin (Latin terminology as a language in medicine) and recommending training course in English and Latin.

Lack of sufficient literature and specialist educators follows as most quoted problem (18 instances, 8,1%), also declined as "*inconsistent Internet access, lack of access to the international electronic medical library... no access to evidence-based medicine*" (17 cases), with a complain that this access "*depends on the doctor's budget*".

Some quotes are related to gaps in the training, such as "*need to pay more attention to clinical examinations*", "*...to the procedures during the lessons*", "*to improve practical training*", "*It is necessary to improve practical experiences with corpses and tools*". Three respondents specify that "*students learn not in practice; they cannot see anything*". Interesting for the development of new curricula is the suggestion that "*Students need to study Deontology, Ethics and Economics at the university level*" (Department of Education) and "*It is necessary to improve subordination, deontology, ethics and aesthetics among physicians*" (Department of Health).

Further criticalities are randomly signaled, the most interesting being "*inadequate funding in the medical field*" (7 cases), "*low financial security*", "*need to improve qualified degree*", "*need to improve qualified doctors*", "*need to improve the professor*" (!), "*Watching the quality of learning*".

Eventually are noteworthy two notes on the need to have "*more introduction to such student projects*" and "*more student participation in international projects*".

It has a particular interest to see how pediatricians are the least appreciating the separation of pediatric training from general medical training.

The same interest is raised by observing how the interaction with medical schools abroad and routine access to international medical literature is considered among the most critical weaknesses and therefore badly needed; declination of this observation is the see how third in ranking is the lack of foreign language knowledge, fundamentally hampering both interaction and literature access.

Open answers give many interesting clues on the whole system: the need of a more appealing involvement in training, to avoid the lack of interest reported by many, the introduction of new technologies and new topics to teach such as ethics and economy. It is intriguing and needing a more in-depth study the call for more practical activities, because “students don’t see anything”, while in the general overview of the strengths the combination of practice to theory was evaluated with an 8,5 mark. Practice must be improved or is already adequate? A bit worrying the request for an increased subordination, at least for a European sensibility.

All in all, we can perceive a rather strong inclination to open to the rest of the world.

- *Which are the most critical features of the medical training system adopted in your Country you would possibly change?*

Out of the 264 respondents, 143 (54,1%) answered “no changes”, with 14 (5,3%) “I do not know” detailed in 3 cases by a disconsolate “it does not depend on me”.

Among other critical features quoted by some respondents are bureaucratic views of governing bodies, low economic security in the health system, lack of respect between colleagues.

Features to be changed or abolished: Credit Modular System, test exams to a traditional form, the quality of practical exercises (2), old postgraduate study programs, methods of training system (4), excessive content of theory in books, going to two drastic statements such as “A lot of things - methods of learning” and “Everything needs to be changed”, or a more diplomatic “no need to change, but need to update”.

Some respondents turned around the question and proposed some positive changes: “Reduce the number of students in groups of learning and increase the number of hours in pediatrics” (31 instances), “increase laboratory research methods” (4), “More exchange of experience between other universities and clinics” (2), “introduction of new training modules and medical technologies in child care”, “availability of student cooperation in other countries”, “improving doctors’ access to evidence-based medicine and pediatric research”, “availability of diagnostic and therapeutic procedures in material terms for the population with medium and low income”, “humanitarian subjects”, “improve the quality of practical exercises”, “increase system equipment”, “Increase the number of hours in pediatrics”, “reduced lecture hours in humanities”, “Simulation training”, “tested exam method”, to finish with a very practical “Increase the salary for employees”.

- *What weaknesses in the education system can interfere with its successful implementation?*

According to 125 of the 268 respondents (46,6%) there are no interfering weaknesses. Most of these are general pediatricians.

108 respondents (40,2% of the total respondents) detailed the type of “lacks” that according to them is hampering the education system, namely the lack of high level specialist (mainly quoted by University teachers), lack of appropriate funding to the health system, lack of appropriate equipment and technologies, lack of access to internet and literature (mainly quoted by students), or also lack of interest in the studies. Fig. 12 shows graphically this distribution, showing relative percentages.

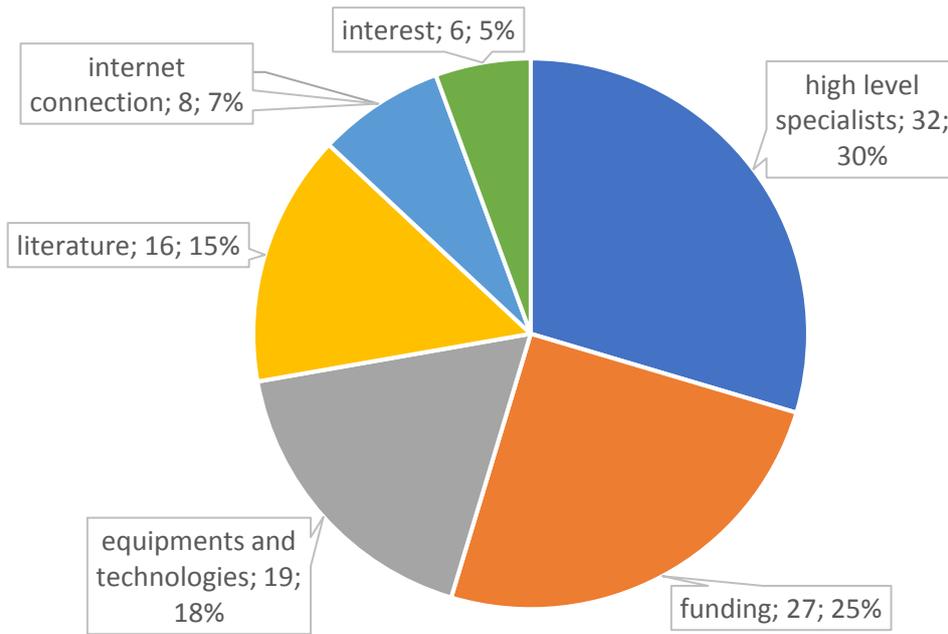


Fig. 12 – Weaknesses in education system

Among other weaknesses - quoted by 1 to 2 respondents each - are incompetence and bureaucracy, corruption, ministry oversight, misunderstanding between colleagues, inability and non-availability of students to use Internet, lack of an online network with international universities, large number of students in groups, with no way to pay enough attention to each one, inadequate education system and inadequate system of testing.

3.3.3 Weaknesses – Uzbekistan

➤ What do you consider as the most critical problems in the medical training system today adopted in your Country? (1 = not relevant 10 = very much relevant)

Respondents' status	1) The separation of pediatric training from general medical training	2) The lack of proper postgraduate training in pediatric subspecialties	3) An excessively theoretical content of curriculum	4) The lack of simulation-based training	5) The lack of interaction with medical schools abroad	6) The lack of training in interaction among colleagues	7) The lack of training in international medical literature consultation	8) Lack of training in the diagnostic centers for newborns	9) Lack of student involvement in pediatric studies	10) The lack of access to evidence-based medicine	11) The lack of foreign languages knowledge	respondents' average
Department of Education	5,3	6,1	6,0	6,6	5,7	6,0	5,3	5,0	5,7	7,1	6,9	6,1
Department of Health	4,1	5,6	5,0	6,6	6,3	6,4	6,9	5,6	5,4	5,7	5,9	5,8
Professional association	6,0	6,5	8,0	6,5	8,5	6,0	7,5	5,5	6,0	7,0	8,5	6,9
University - pediatric neurology	4,4	5,6	4,6	7,1	8,0	7,6	8,0	6,3	6,9	8,0	8,0	6,8
University - pediatric surgery	5,0	6,3	6,1	6,2	6,2	6,1	5,7	5,8	5,9	6,4	6,3	6,0
University - Pediatrics	5,7	6,2	6,4	6,7	5,9	6,2	6,3	6,2	6,1	6,0	6,0	6,1
pediatric surgeon	1,0	10,0	1,0	9,0	10,0	5,0	10,0	5,0	4,0	10,0	10,0	6,8
pediatrician	6,8	7,2	7,0	9,0	8,6	9,2	9,0	9,0	9,0	9,2	9,4	8,5
Postgraduate student	6,4	6,0	6,2	6,3	6,6	6,3	6,8	6,2	5,5	6,5	6,3	6,3
Undergraduate Student	6,6	6,3	7,1	7,1	7,0	6,7	6,8	6,5	6,7	6,9	6,7	6,7
general average	5,8	6,2	6,2	6,8	6,6	6,5	6,8	6,2	6,1	6,6	6,6	6,4

The lowest level of criticalities is found by Department of Health, while the highest one by the pediatricians, with a meaningful difference of some 3 points. The separation of pediatric training from general medical training seems to be the least critical weakness (5,8/10), while the more critical is considered lack of simulation based training and lack of training in international medical literature consultation (6,8/10).

The open question answered by University teachers in pediatrics, in addition to quote little literature and textbooks, recall the lack of psychological testing or interviews on adherence to the profession upon admission to a medical university (2) and how “most of the faculty thinks the old way and is not ready to accept new methods of learning”.

It is noticeable the fact that one of the most critical features of the CA system to European eyes, the separation of pediatric training from general medical training, is considered the least relevant weakness by all respondents.

- *Which are the most critical features of the medical training system adopted in your Country you would possibly change?*

Apart one postgraduate student for whom almost all the system is critical, the most critical feature for more than one third of respondents – both teachers and students - is the lack of practical training vs an excessive theoretical content (*"Enlarge practice... A lot of theory, I want more practice... Increase hours near patient bed... Little practice... Reduce theoretical hours for students... The introduction of practice at the bedside... A lot of theory"*). The second most critical feature, for 19% of the respondents, is the testing system (*"Remove Tests and allow students to express their opinion... for example, a student skipping heavy studies and learning tests answers in one day, the day after the test does not remember anything about the subject and has zero in practice... Tests should not be the main evaluation criteria in medicine"*).

According to University teachers, what is needed is *"evidence-based medicine training, cancel short-term specialization courses, introduce a 4-year residency in therapy, surgery, pediatrics"* and *"Mandatory class attendance"*. It is also suggested to improve access to foreign literature, to add medical English in the curriculum, to improve financing of the system, to implement protocols and standards, to have *"fewer students per teacher, for example 2-3 students"*. As far as length of studies is concerned, we have again here a respondent asking for *"more years of education"* and another one *"Do not change the years of study"*.

Department of Education suggests for students: *"Strengthening of learning practical skills, the introduction of certification for the right to treat (in addition to the state exam). For postgraduate students: reduce the existing documentation required during the educational process, introduce the accumulative system of points for improving qualifications"*.

- *What weaknesses in the education system can interfere with its successful implementation?*

"Poor bedside practice... little practice, few training facilities" are among the most frequent quotes, specified in detail as: *"Not enough university clinics, respectively limited access to patients. The existing ratio of students to teacher is a large number of students in a students' group, plus a poorly developed material and technical base"*.

For University teachers the testing system is the more controversial: *"Crammed tests... Testing for students is not an element of knowledge assessment... Tests interfere with an objective assessment of the student"*. *"Learning the tests"* possibly refers to the fact that students learn by heart just tests answers, with no any critical study. Others emphasize *"Lack of desire to work on oneself, lack of self-criticism"* as well as *"many factors, financial, organizational"* and *"Small foreign experience, low level of training"*.

Bureaucracy is seen as the main criticality in the system, with many respondents (also from State departments) asking for a change in the laws and regulations as well as for a support from Government authorities, sometimes acting as in a *"monarchy"*.

Inadequate funding is denounced as a problem, and the fact that *"Education costs too much"*. Professional association respondent duly emphasizes the need of a higher payments for trainers.

Other criticalities detailed are the language barrier, insufficient practice for students, few training facilities, corruption, if not in general *"A lot of problems, I find it difficult to answer"*.

The observation on the reduced if not totally absent foreign experience with other educational systems could explain the reluctance to accept changes in the actual system, considered as the best possible not having any basis for comparison.

3.3.4 Weaknesses – Country comparison

Country	1) The separation of pediatric training from general medical training	2) The lack of proper postgraduate training in pediatric specialties	3) An excessively theoretical content of curriculum	4) The lack of simulation-based training	5) The lack of interaction with medical schools abroad	6) The lack of training in interaction among colleagues	7) The lack of training in international medical literature consultation	8) Lack of training in the diagnostic centers for newborns	9) Lack of student involvement in pediatric studies	10) The lack of access to evidence-based medicine	11) The lack of foreign languages knowledge	respondents' average
Kazakhstan	6,6	6,7	6,5	6,6	6,7	6,4	6,5	6,4	6,6	6,4	6,5	6,5
Tajikistan	6,1	6,4	6,5	7,6	8,1	6,0	8,0	5,3	7,1	7,7	7,9	7,0
Uzbekistan	5,8	6,2	6,2	6,8	6,6	6,5	6,8	6,2	6,1	6,6	6,6	6,4
General average	6,2	6,4	6,4	7,0	7,1	6,3	7,1	6,0	6,6	6,9	7,0	6,6

Tab. 19 – Weaknesses Country comparison

3.4 Questionnaire – Opportunities

In a SWOT analysis Opportunities are classified as external elements that might be helpful in achieving the goals set for the project. These factors could involve arrival of new technology, fulfilling of new patients' needs, update training, etc. In our case we proposed a question with predetermined possible answers:

- What would you like the proposed project to bring to your country's medical education system (more choices possible)?
 - A structural expansion of horizons in the field of international cooperation
 - Improving the program of Continuous Medical Education in the field of pediatrics
 - Change in the actual organization of training programs
 - Other to specify

Following were three open questions, namely:

- What opportunities do you expect from a partnership with Europe?
- How to make sure that the proposed changes are accepted and put into practice?
- What kind of opportunities offered by this project play the main role, and which minor ones?

3.4.1 Opportunities – Kazakhstan

- What would you like the proposed project to bring to your country's medical education system?

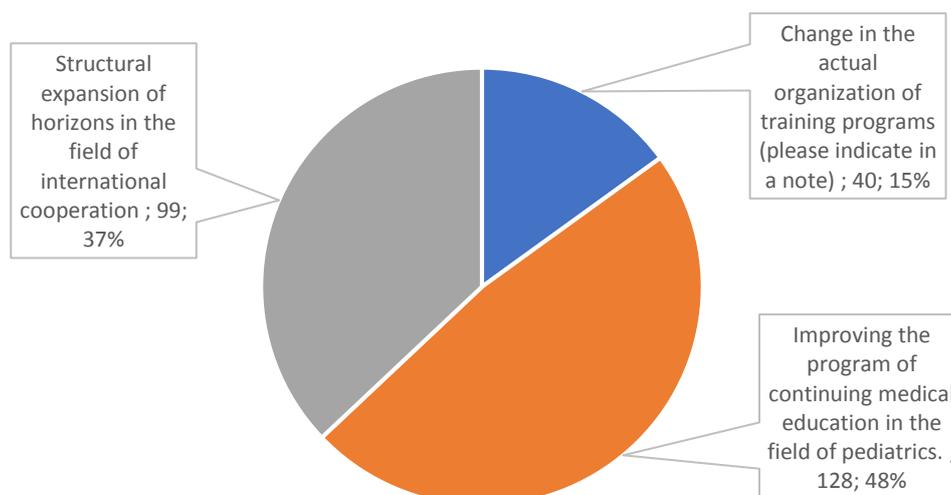


Fig. 13 – Changes hoped for through the project implementation - Kazakhstan

- What opportunities do you expect from a partnership with Europe?

Raise the level of training of graduates to a high quality; improvement in education in medicine; introduction of real evidence-based medicine, not in reports; update educational process in accordance with the EU; emphasis on the causes of child mortality; improvement and Integration of training courses and the quality of student training; improve and exchange practice; expansions of horizons, increase interdisciplinary content.

Among the more detailed opportunities quoted: “more training, but first we need the basis and then act independently”; “Proposed changes to the organization of training programs in the framework of this project”; “conducting relevant scientific conferences, grant research funding”. A final statement of an official of the Dept. of Health “Everything is fine”.

A first observation that can be proposed is the high expectations emerging from the given answers and the wish for a cooperation with other experiences, but with a strong sense of independence, going also to propose that nothing should be changed, if everything is already fine.

- How to make sure that the proposed changes are accepted and put into practice?

The need of a continuous monitoring and evaluation of the project (also through independent experts) is positively emphasized by 33 out of 37 respondents to this questions, suggesting: Analysis of the situation before and after the project, checking educational results and students’ performance improvement, carrying out reporting conferences, meeting the demands of new patients, monitoring polls, publishing the full information on websites. “Only by independent student assessment”; “regularly conducting monitoring congresses with the participation of pediatricians”; “Conduct surveys, as well as personally check among students”; “Graduate qualifications”.

A postgraduate student wisely suggests to “track all changes in the healthcare system and education medicine. At the highest level they will figure it out on their own”, while a University teacher proposes “continuation of the project is necessary (new project) in order to ensure the sustainability of the project and evaluate its effectiveness”.

It is noteworthy that some of the valuable suggestions advanced are already present in the project, such as the evaluation by independent experts (the UEMS examiners, whose reports are detailed in chapter 4), as well as the publication of the results in ChildCA website and the planning of reporting conferences

➤ *What kind of opportunities offered by this project play the main role, and which minor ones?*

Improving the quality of medical education and of public health through collaboration and partnership with European countries and America; sustainability of the project; the emergence of new technologies; children's safety; integration of training into practice; Sharing experience; Integration of our education with the international system. Our universities would be quoted in the world.

A Pediatrics University teacher wishes for “development of a new educational program for pediatricians at the postgraduate level as the most important goal of the project”.

Eventually three respondents conclude with a strong: “For me there are no secondary opportunities. Each achievement for our country is important”.

3.4.2 Opportunities – Tajikistan

➤ *What would you like the proposed project to bring to your country's medical education system ?*

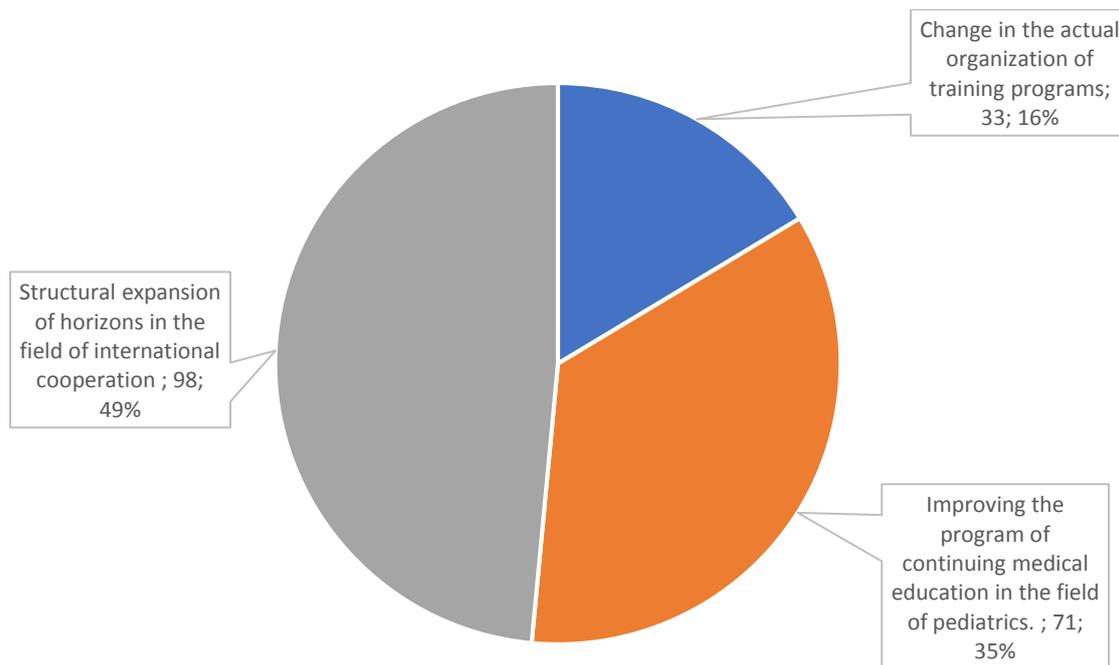


Fig. 14 – Changes hoped for through the project implementation - Tajikistan

Open remarks underline how the structural expansion of horizons must be done “after reviewing the programs of European universities”, and how the change in the actual organization must include more practice and “development of specific training programs with an increase in the duration of the residency”.

➤ *What opportunities do you expect from a partnership with Europe?*

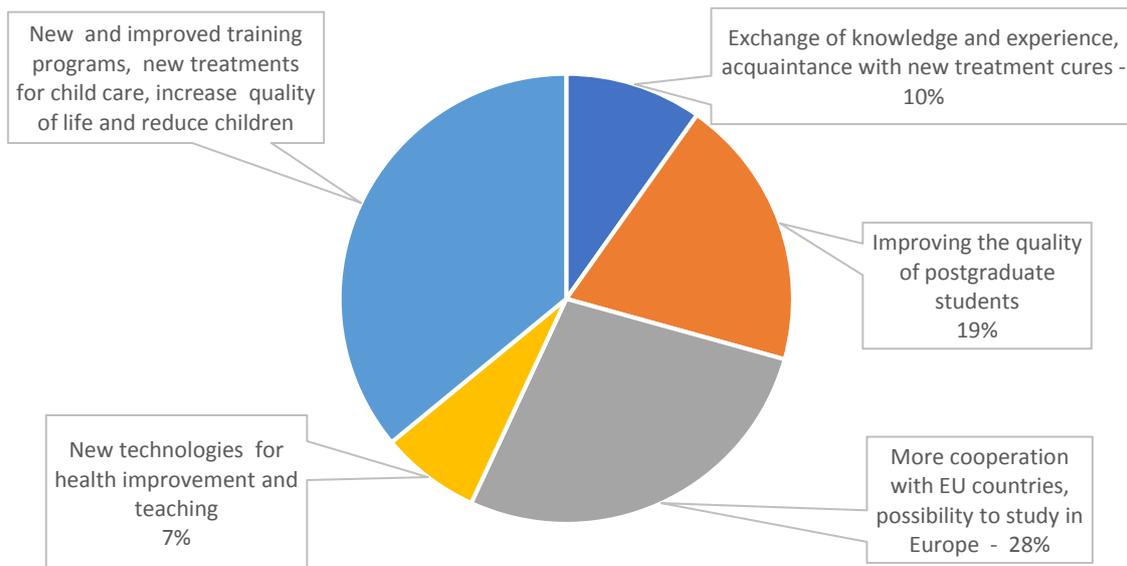


Fig. 14 – Opportunities expected through the partnership with Europe

24 out of 274 respondents (8,7%) expect positive and fruitful opportunities from this “best cooperation”, reaching the level of “Highest expectations” in an undergraduate student; only one respondent gave a negative answer. According to a University teacher, “new pediatric methods in Europe would help us to achieve something else”; a pediatrician asks for “strengthening the role of evidence-based medicine, the widespread introduction and implementation of clinical protocols”, while another one emphasizes the possibility of improving the quality of service for children and increasing the life expectancy of the population, while decreasing the costs. A University professor asks for Nanotechnology and Fetal medicine, while another more simply for reducing disabilities in children. Possibly the most inspired expectation comes from the Department of Education: “Learning new pages of science”.

➤ *How to make sure that the proposed changes are accepted and put into practice?*

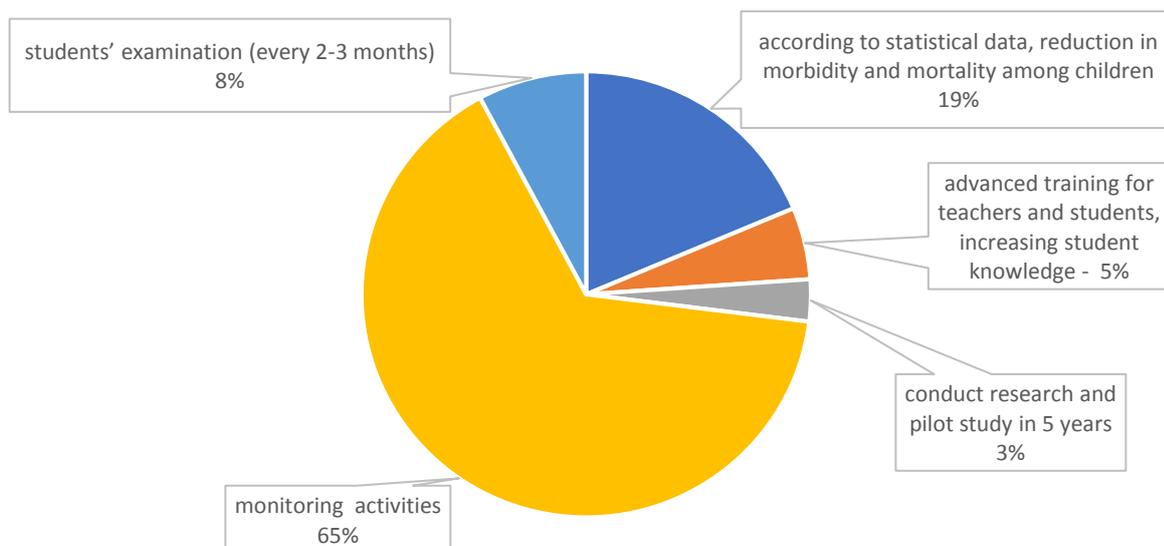


Fig. 15 – Suggested methods to verify project implementation

Fig. 15 summarizes graphically the 261 answers given to the question in five groups comprehensive of the bulk of answers. Among the more elaborate suggestions: *“If there are changes in our curricula towards more practice, then our proposal has been taken into account and accepted”*; *“Reduction in child morbidity and mortality among children after the introduction and modernization of the EU ChildCA training programs”*; *“the emergence of new methods”*; *“Treatment of patients, improving the communication skills of students and teachers.”*

➤ *What kind of opportunities offered by this project play the main role, and which minor ones?*

The question received 267 answers, summarized in broad groups in fig. 16. On top of the answers collected in the figure, there are 48 respondents (18% of the total) emphasizing how the main role of the project has to be played towards postgraduate students, while undergraduate require a lesser attention. Again in the main / minor role are the respondents identifying *“providing equipment”* as main and *“simulation exercises”* as secondary, or just reaffirming that the main opportunity is *“the modernization, professionalization and internationalization of postgraduate education in the field of child care management in Central Asia”* through *“improvement of curricula and strategies for integrated childcare in modules proposed by the EU - ChildCA... creating new training modules”*. Both University teachers and Department of Education officials wish for *“broadening horizons”*, *“implementation of all project rules”*, *“structural expansion of horizons in the field of international cooperation”* and *“no termination of financing and further development of relationships”*. Eventually, an academician concludes with a philosophical but strongly realistic: *“Time will tell”*.

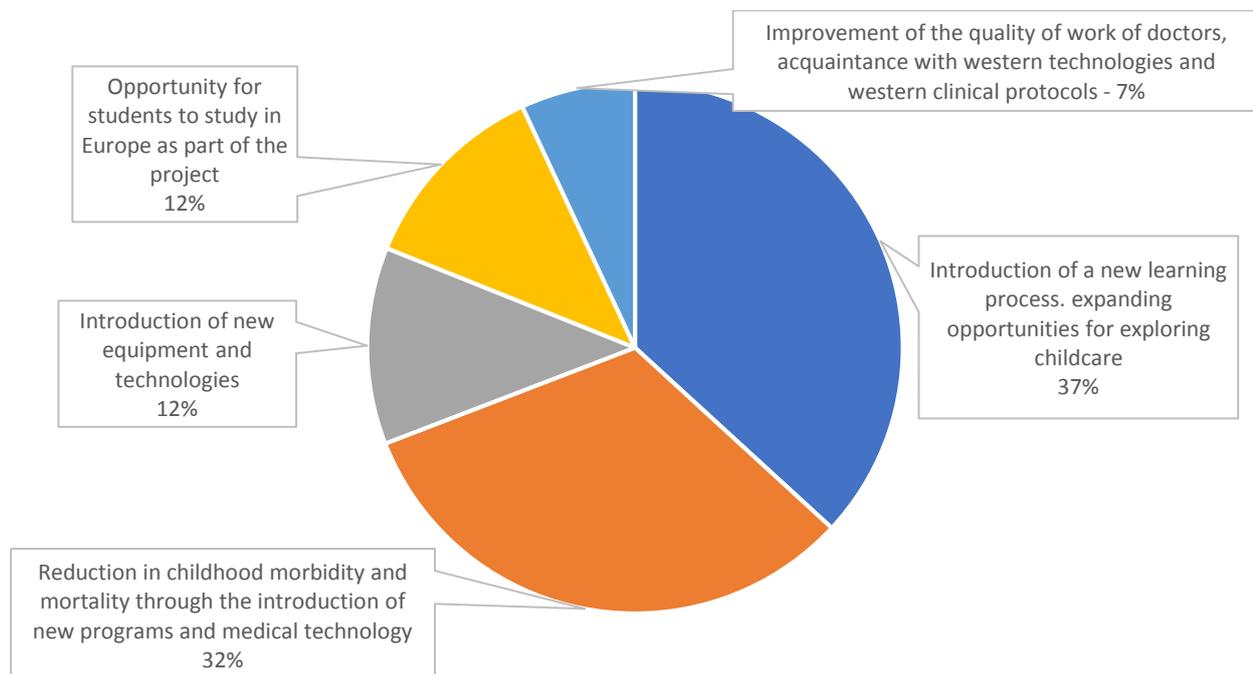


Fig. 16 – Opportunities expected through the project

3.4.3 Opportunities – Uzbekistan

➤ *What would you like the proposed project to bring to your country's medical education system?*

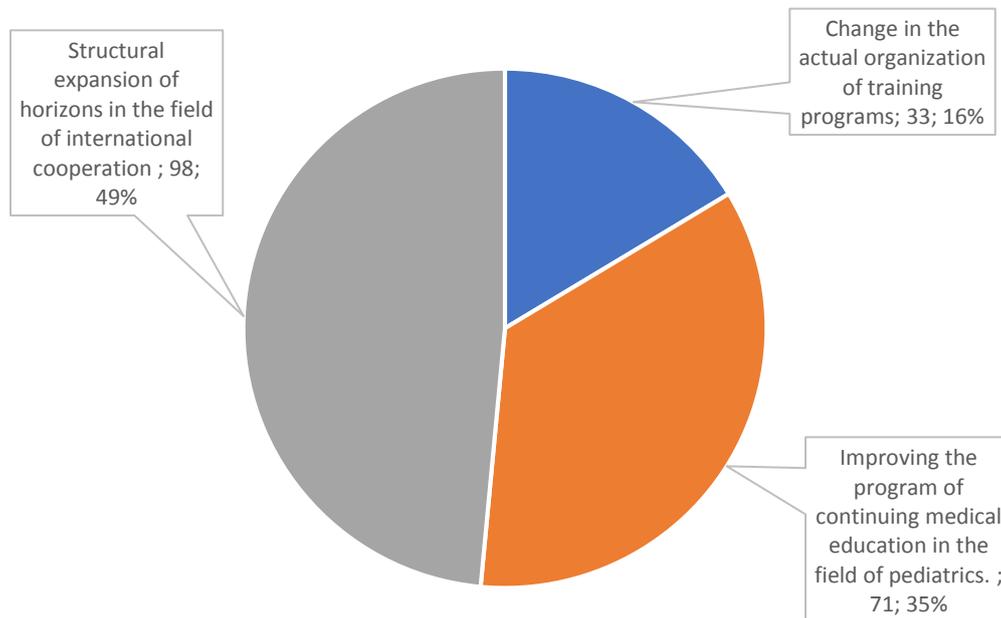


Fig. 17 – Changes hoped for through the project implementation - Uzbekistan

Among the proposed changes in the organization of training programs are quoted: increase the number of years of education (4), improving programs through the experience of foreign colleagues and harmonization with international pediatric training standards (3), introduce a credit transfer system in the learning process and medical English, introduction of new technologies in the learning process, with reduced hours of theoretical and lecture classes, more practice and self-education.

➤ *What opportunities do you expect from a partnership with Europe?*

Broadening horizons (5), improving medical education in CA (5) both scientific and practical (5), through experience exchanges (9) and internships abroad (2), attracting professors for conducting master classes in the exchange of experience (3), in order to complete transition to a medical education system in accordance with European standards (3), mastering high-tech healing methods (2), implementing the best practices of European partners (1), improving and expanding scientific and practical knowledge including comprehensive application of minimally invasive technologies (2) and introducing English in the teaching programs (2).

➤ *How to make sure that the proposed changes are accepted and put into practice?*

Monitoring and testing the implementation of project achievements in the educational process (6), from the quality of healthcare providers after learning according to the new method (4), and according to project results, on sustainability of results (1), to be done also in the long term according to the medical statistics (2) possibly by and independent and expert monitoring by foreign colleagues so that the local education system does not interfere (1), or else via the Ministry of Health and the Ministry of Higher Education (1).

The project can also be evaluated checking if it is launched into the curriculum (1) and measuring the help received in lecture material and teaching aids (2) in constant contact with students (2).

According to 3 respondents, however, this task is “impossible”.

➤ *What kind of opportunities offered by this project play the main role, and which minor ones?*

introduction of students into practice also with simulation centers (4); change approach of learning through introduction of new and interactive learning methods and technologies (3); reduction of infant mortality and improvement of pediatric practice in the country (2); Establishment of international cooperation and innovative language learning (1), taking advantage of foreign colleagues' experience (2). *"Opportunity for further training abroad play a major role"* (1). An optimistic appreciation of the project is to have through it a free access to postgraduate training, while for two respondents *"Everything is important"*

3.5 Questionnaire – Threats

Threats according to the SWOT system are external factors that could gravely affect the success of the project, such as old regulations that cannot be changed, external negative influences, lack of funding, lack of willingness to open the mind to new ideas, etc. In the questionnaire this section has been arranged in four open questions:

- *What risks do you see in the proposed collaboration between the universities of your Country and Europe?*
- *What in particular would you advise to avoid?*
- *Are there processes in the education system that can lead to a decline in the quality of training?*
- *Any other threat you could fear for a successful implementation of the project?*

3.5.1 Threats – Kazakhstan

➤ *What risks do you see in the proposed collaboration between the universities of your Country and Europe?*

24 out of 56 respondents (42,8%) do not see any risk in the proposed cooperation.

Among the risks most quoted are lack of funding (6), external negative influences (3), *"Risk and outflow of the best students"* (3); *"The language barrier"* (2) also specified as *"Misunderstanding of the medical terminology in a foreign language"*. A pediatrician fears that the project will carry *"No results but just tourism"*.

The most feared risk anyway seems to be an inappropriate approach of the project to the local situation, with related nasty consequences: *"We can't achieve the desired consensus if the characteristics of each participant (country) are not taken into account... lack of understanding of the local education system... non-compliance of educational programs with the country's requirements... Possible neglect of local realities... Some views on public health are not the same. Human responsibility for our health is low... differences in knowledge and approach... mismatch of the social and financial level in the real life... no understanding of local mentality... distrust of older generation of doctors ... loss of our strengths in the medical education system"*.

We must keep the highest attention on the risk of imposing or just proposing changes not taking into account the actual reality in CA Countries, as emphasized by many respondents. On the other hand, we can underline that a deeper understanding of the local reality before starting any attempt for a change is actually the fundamental goal of this baseline document.

➤ *What in particular would you advise to avoid?*

14 out of 38 respondents (36,8%) do not specify any risk. The single more quoted risk is corruption (10), thus detailed: *"The correct selection of applicants. Completely make up the system of admission to medical schools"*. Two respondents mention *"Politics"*; one answer each for *"Mindless copying... Incompetence... Violation of labor disciplines... Student restrictions when choosing a discipline... external negative influences... Excessive instrumental diagnostics"* and, more philosophically: *"lack of desire to broaden one's horizons"*. Brain drain is feared by some respondents, quoting: *"Education abroad of students without interest to return to their native country and apply the knowledge gained for its development"* and *"excessive desire for Europe"*.

Here again returns the worry for a mindless change of an educational system, with University teachers recommending to *"carry out a preliminary analysis and take into account the characteristics of each country"*; *"it is necessary to take into account the peculiarity of our population when implementing some projects"*; *"It is not possible to transfer European educational programs to the countries of Central Asia. Adaptation is necessary taking into account the characteristics and needs of each country"*.

What is noteworthy in these last comments is that actually they do not refuse changes *a priori*, but rather urge for a very careful and knowledgeable new proposal.

Comments received through the Kazak National coordinator shed some more light on the whole system: *"In recent years, innovative medical teaching methods with a sufficient number of interactive approaches have begun to be introduced in Kazakhstani medical universities. Disciplines such as evidence-based medicine, communication skills, medical statistics are widely introduced in the curriculum... At the moment, we have begun the first stage of introducing "student-oriented education" with many interactive approaches in our medical universities. Educational programs motivate students to play an active role in the joint creation of the learning process... The insufficient level of English proficiency of our residents complicates the learning process and entry into the international medical space and deprives them of the possibility of distance (on-line) training in specialized medical associations"*.

➤ *Are there processes in the education system that can lead to a decline in the quality of training?*

8 out of 41 respondents (19%) do not see any dangerous process, 5 (12%) find difficult to give an answer, while all the remainders (69%) give a positive answer, sometimes very strong (*"Yes and big ones"*). These negative processes are detailed in this way: corruption (3) *"Corruption, a random ass on a grant for a degree in general medicine"*; frequent changes in educational programs (3); bad testing (2) *"Students are more engaged in cramming tests"*; Lack of funding (2); Excessive amount of reports and paper work, duplication of electronic documents by physical ones (2); poor contact with practical health care and educational system; Soviet horizons (!!); Lots of students; *"Poor professionalism of teaching"* (pediatrician); *"Young professors with no experience"* *"No competition among students"* (postgraduate students).

Of particular interest two last comments coming from a University teacher and a postgraduate student: *"lack of desire to broaden one's horizons"* and *"one's consciousness is not ready to change"*.

➤ *Any other threat you could fear for a successful implementation of the project?*

Postgraduate students express worries as such: *"Opinions of older generation... Incomplete project implementation and university corrections... termination of the project"*. A University teacher fears: *"Change of leadership in the education system, which may affect the implementation of project results"*, while a pediatrician wishes for: *"It is necessary to raise the prestige of the profession of a doctor, especially a pediatrician, while now the lowest passing score in a medical university, and those who couldn't pass anywhere else, they choose to become a pediatrician"*.

3.5.2 Threats – Tajikistan

➤ *What risks do you see in the proposed collaboration between the universities of your Country and Europe?*

Out of 284 respondents, 208 (73,2 %) do not see any risk. Percentage distribution of those who identified some risks is graphically presented in fig. 18.

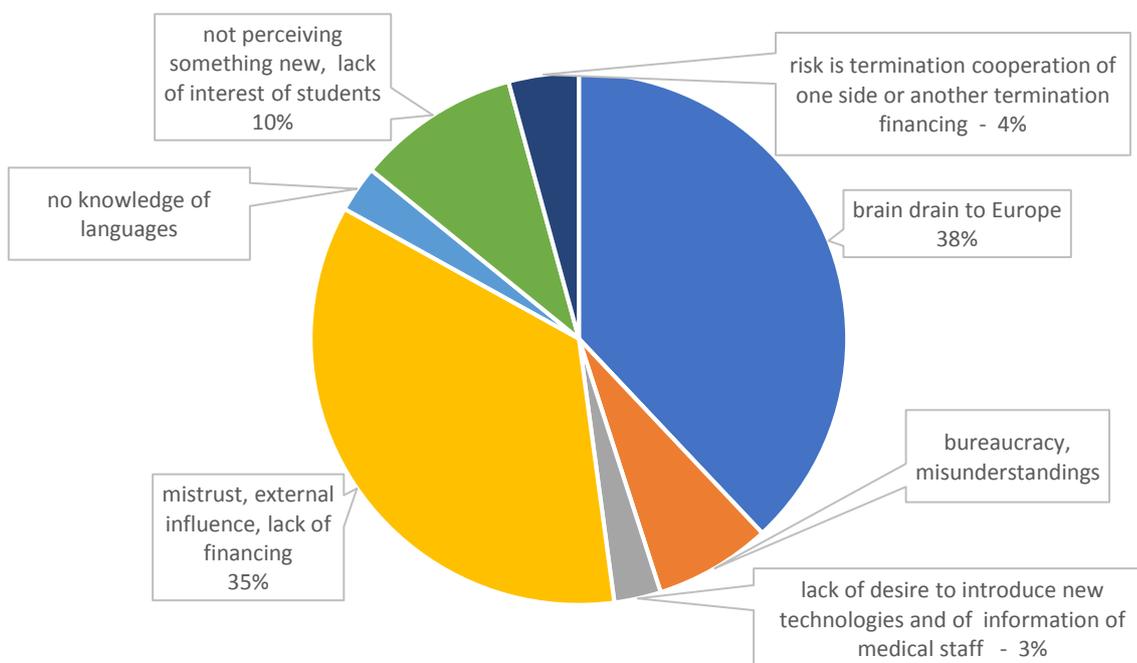


Fig. 18 – Risks identified in the proposed collaboration

One particular risk pinpointed by an undergraduate student is the “*lack of desire to broaden the horizons of the teachers over 50 years old*”.

Many respondents expressed a wish rather than identifying a risk: “*EU approved funding and support at the project development stage must not stop*”; “*no risks if just only we work honestly and clearly*”; “*not everything that European partners will offer can be implemented*”; “*risks should not be, work must be done*”; “*there are not risks if we support each other*”; “*I do not see threats, it is necessary to welcome the project and support such EU projects*”. A postgraduate student sees “*great perspectives*”, and a pediatrician hopefully wishes: “*together and amicably support each other for a successful project - you have to work hard*”.

➤ *What in particular would you advise to avoid?*

The most quoted risks are graphically detailed in fig.19. Other quotes (1 to 3 each) can be roughly divided in “positive” and “negative” towards the project: among the first, the wish to avoid disruption of the project, the fear of failure in timely fulfill obligations on each side, the risk of poor financing and a lack of desire to incorporate new perspectives into the learning process, the suggestion avoid a lot of theory not related to practice, carelessness, fuzziness and external negative influences and to adopt an unobtrusive attitude.

Among the negative positions, a new threat such as: “*do not touch system issues*”, or “*It is not wise to work on these requests*” (3); the call to avoid unreasonable work on this project (3), a couple of incomprehensible quote of “*Nazism*” from the Department of Education and from a student, and eventually a sad comment from a University teacher “*No respect for our country*”.

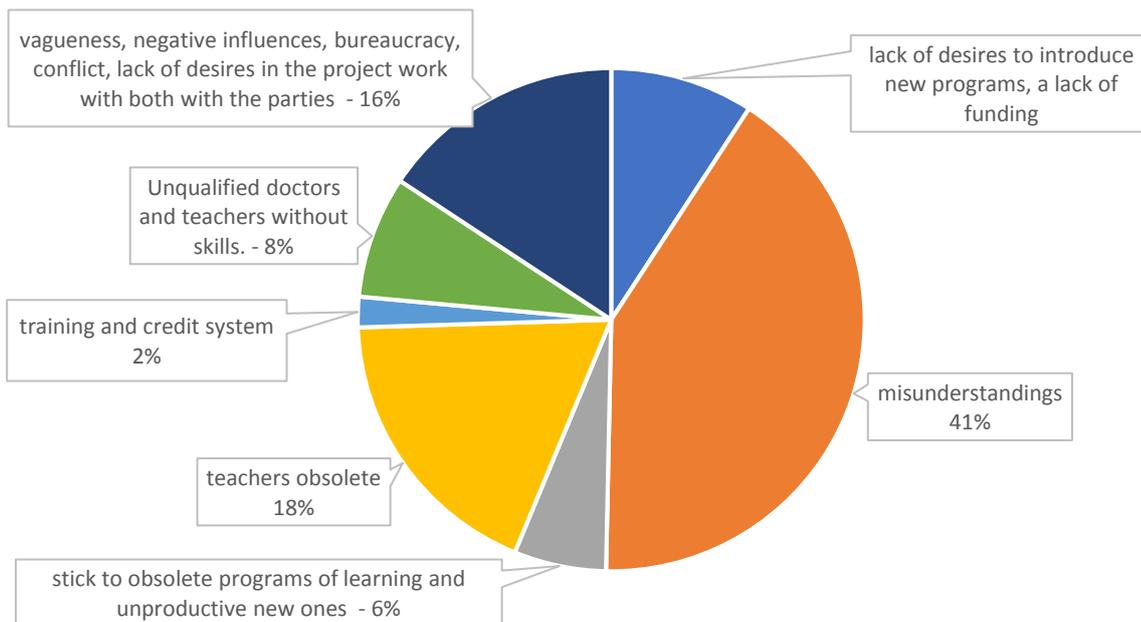


Fig. 19 – Risks to avoid in the proposed collaboration

➤ Are there processes in the education system that can lead to a decline in the quality of training?

Fig. 20 summarizes the most quoted negative processes. Not included because out of scale the negative process by far considered the most negative by 48 out of 273 respondents (17,6%), i.e. the Test control system in education. No negative processes have been pointed out by 173 respondents (63,3%).

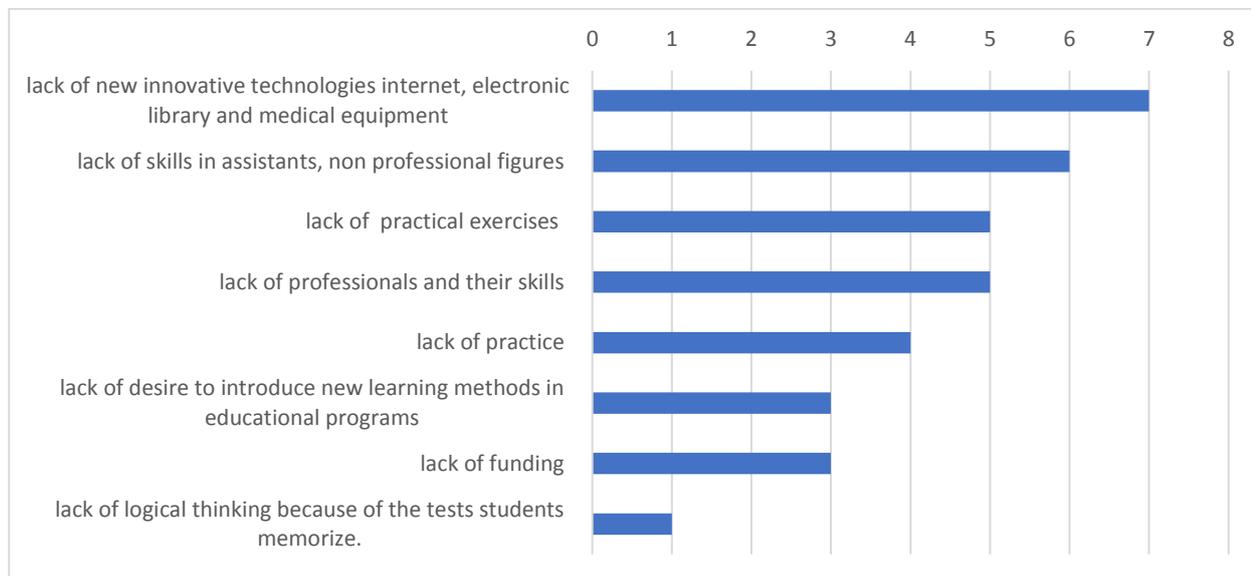


Fig. 20 – Negative processes leading to a decline in the quality of training

One quote each has been collected by these elements (in alphabetic order): credit modular system, distinction of educational systems, inadequate school base, laziness, loan system, lots of students in groups, low level of knowledge of assistants, no interest, numerous unnecessary exams, obsolete programs of learning, old standards before the introduction of the project, termination of the cooperation. A pediatrician gives an articulate answer: “slow reform of the education systems themselves, the reluctance of mentors to switch to new principles of training specialists, poor availability of interns outside cities, poor knowledge of foreign languages, lack of most of the modern medical literature base.”

➤ *Any other threat you could fear for a successful implementation of the project?*

Out of 274 respondents, 206 do not see any further threat to the project implementation (75%). Among the answers given, by far the most common is the fear of inadequate project financing (42; 15%), declined also as need of greater financial support for health care workers. Three respondents emphasize a risk for the project if there is no support from the relevant Authorities; other possible threats could come from the implementation of other programs (4), from the already quoted lacks in internet connection, electronic medical library, new medical technologies, specialists. More sophisticated is what pinpointed by a University teacher *“lack of understanding between health care organizers and promising doctors”*. Department of Health recalls that *“there are systems for the profession”*, possibly insinuating that these systems should not be changed; this statement is counterbalanced by the strong one of two University teachers, *“do not accept any threat during project implementation”*.

3.5.3 Threats - Uzbekistan

➤ *What risks do you see in the proposed collaboration between the universities of your Country and Europe?*

22 of the 36 respondents to this question (61%) do not see any risk in this cooperation. Lack of support from Government and Ministries is feared by 6 respondents, lack of funding by 2. A pediatrician underlines the risk of not achieving the project goal, and a University teacher the one of brain drain. Of particular interest are the fears that differences in the education systems will not allow to change some standards (2), and the observation of a University teacher, fearing *“the formation of future specialists as “experimental rabbits” with a not properly adapted training system, followed by a decrease in the quality of the specialist”*.

➤ *What in particular would you advise to avoid?*

Half of the 25 respondents recommend not to change the years of study, considered *“difficult”* if not *“impossible”*. Other mentioned threats to avoid are: forcing the introduction of changes (2); bureaucracy (2); obsolete norms (2); project blockage. Worth of a specific mention the observation of a Department of Education official: *“Making decisions without taking into account the characteristics of existing education, mentality, socio-economic and natural conditions of the country.”*

➤ *Are there processes in the education system that can lead to a decline in the quality of training?*

15 out of 32 (46%) do not see any negative process. Among the remainders, these are the most quoted: Corruption (4); Lack of practical skills (3); Imbalance of theory and practice (2); frequent replacements of the learning programs (2); Lack of funding (2); Self-education; Lack of literature; Not qualified teachers; Narrow horizons.

➤ *Any other threat you could fear for a successful implementation of the project?*

12 out of the 45 respondents (26%) do not see particular threats. Lack of Ministry support (6) and bureaucracy (4) are the most quoted threats; professional association points out the ignorance of innovative (or just foreign) language, while two University teachers denounce the risk of involving in the project people with a short work experience with students (specialists, cadets, etc.). Local education system and difficulties in changing it are quoted as well; a postgraduate student denounces: *“Corruption, old teachers and doctors do not allow young people to surpass them and take their places in the hospital and in the departments”*.

Eventually two other teachers declare their fear for an earthquake, a grounded fear because: *“Uzbekistan is located within one of the most seismically-active regions in Central Asia”*⁵. Unfortunately, seismic prevention is beyond the scope of ChildCA project, that cannot help in any way towards this scope.

⁵ <http://www.uz.undp.org/content/uzbekistan/en/home/presscenter/pressreleases/2016/10/12/challenges-of-modern-seismology-discussed-in-tashkent.html>

3.6 Questionnaire – Final remarks

From the three Countries 274 final remarks were collected. 152 of them (55%) wish the project to be successful, many specifying that it will help to reduce morbidity and mortality in children.

38 respondents propose that within the framework of the project master classes will be organized both on methodological trainings of postgraduate students on European programs, and on medical activities.

11 respondents offer to contribute to the successful implementation of the project: *“I am very pleased to welcome this project. Moreover, I will be pleased to share my knowledge with my experience”*.

7 propose the introduction of new training programs and medical technologies simulation training and much more, and other 7 invite to continue the project at an excellent level, like other 5 asking to continue cooperation for improvements in child care with many countries of the world.

Some respondents would like to start the project as soon as possible, while others variously supported in these ways and with many suggestions: *“Cool, we support”*; *“we need to have hospital hospitals”*; *“Increase course duration and practice more”*; *“It will be better to work together with Europe to learn from them their experiences”*; *“Only the profession of a doctor brings real help to children”*; *“I wish that there are more such educational projects with the EU!”*; *“use all forces for project implementation”*; *“do not do a paper roll job”*; *“make every effort for the implementation of the project”*; *“Organize so that it is accessible and effective to everyone”*; *“Need to introduce a European training system”*.

More detailed comments are the following:

- *Not only proposals for the modernization of the training program for clinical residents, but programs for training specialists at the 2nd stage of higher education in the magistracy are welcomed. In addition, it is imperative to improve the existing continuing education programs for doctors and the continuing professional education system in general.*
- *All doctors must know foreign languages. Need online patient consultation, online training and development of practical skills.*
- *introduction and inclusion of new educational technologies into the educational process; training a competent specialist in health improvement in the children's service.*
- *We wish the project successful implementation, reducing child morbidity and mortality, increasing the life expectancy of the population, improving curricula and modern strategies for postgraduate education in the Republic of Tajikistan.*
- *Create and introduce new training modules in child care in postgraduate education adopted in the EU countries aimed at achieving better results in improving the quality of the children care, reducing child morbidity and mortality as in the EU countries.*
- *I think the project will be successfully implemented if there is support from both parties.*
- *I think with the introduction of this project, children's morbidity and mortality in children in our republic will be reduced.*
- *Funding should be expanded for postgraduate studies. Improve the work with the practice of a doctor in the department*
- *I would like to see our medicine at the very top in the future! For this, it is necessary to work closely with European and American institutions to organize online lectures, practical trips, exchanges of doctors, masters, clinical residents, and even students.*
- *It would be necessary for the project to introduce a ready-made training system such as they have set up in this project, fully implement it with us, let it be in English, we will translate if necessary, since we also have English-speaking groups.*
- *The prestige of the profession must be restored the respect of the people must be restored, and so that the state finally realizes the problems of medicine, including medical education.*

A special mention deserve the University teacher asking: "Read *my wishes carefully*"⁶, or the other colleague hoping: "*I want everything to be successful and good, for the sake of children nothing should be bad and impossible*". A Department of Health official gets the matter very seriously pinpointing the "need to *prepare a brigade*" to implement the project (or to jail the proponents?).

Finally, two poetical remarks: "*Only you have to go forward for the successful implementation of the Erasmus + project*" and "*The children will not hurt and will not die, all the children will smile!*"

⁶ All the suggestions proposed by the Colleague have been mentioned in the relevant paragraphs

4 Trainees' assessment

4.1 Pediatrics Assessment

UEMS assessors in Pediatrics, prof. Liviana Da Dalt and Ana Neves

Assessors in Pediatrics, were appointed by the President of the Union of European Medical Specialists Section of Pediatrics (UEMS-SP) and European Board of Pediatrics Prof. Liviana Da Dalt, National Delegate in UEMS-SP and Prof. Ana Neves, Vice President of UEMS-SP.

4.1.1 Organization of the pre- and postgraduate education:⁷

The evaluation of the situation was done in the 3 countries: Kazakhstan, Tajikistan and Uzbekistan.

The Pediatric Education systems in these countries are different from Europe and slightly different between them. The main difference from the European system is the existence of a so called **“Vertical system of Pediatric education”** composed by:

- A) A Bachelor of Pediatrics (undergraduate course, 5 years duration – 300 ECTS) separated from the Bachelor of General Medicine. The two Bachelors share three common years and the two different years for each pathway. This separation of the 2 Faculties of General Medicine and the Pediatric Bachelors is a heritage of the soviet system and is still in place.
After completing the Bachelor in Pediatrics, doctors can practice in primary care (outside the Hospital).
- B) A Residency training program in Pediatrics, hospital-based, which differs in duration and status of the residents between the three countries.
 - 1- Kazakhstan, the richest country of the three, has 2 and half years of residency plus 1 non-mandatory year of subspecialty. Residents are currently paid in this country. Only after completing the residency program, the Pediatricians can practice as consultants in the hospital. Master and PhD degrees in Pediatrics are offered to Pediatricians interested in Academic Careers.

⁷ This chapter has been drafted by UEMS experts on the basis of information and discussion with Tajik teachers and students during Bukhara meeting. It has been nevertheless commented by the Tajik national representative with these words:

“There is no Bachelor's degree in Pediatrics in Tajikistan. The faculty of General Medicine, like a faculty of Pediatrics, needs to study for 6 years – undergraduate course: General Medicine – 420 ECTS, Pediatrics – 420 ECTS (not 5 years – 300 ECTS). In Tajikistan 1 ECTS is 24 hours... our University issues MD diploma, not MBBS. For graduates of the faculty of General Medicine, the qualification of a general practitioner is indicated, and for graduates of the faculty of Pediatrics, a general pediatrician is indicated. Diplomas do not give the right to independent work. It is necessary to study clinical residency or internship (for Primary Health Care). Secondly, the basic disciplines at the faculties are the same, but there is additional information for the faculty of Pediatrics. For example, in anatomy, in the faculty of Pediatrics, in addition, there are sections of the features of the anatomical structure in children and newborns. Students of the faculty of General Medicine in pediatric hematology study only iron deficiency anemia, while students of the faculty of Pediatrics in addition study hereditary anemia and other blood diseases in children. Students of the faculty of General Medicine study jaundice, students of the faculty of Pediatrics study neonatal jaundice in addition and so on every subject. Therefore, the statement “The two Bachelors share three common years and the two different years for each pathway” is not true for Tajikistan.

[About students' fees, it is emphasized that] if a student graduates from University (undergraduate course) with honors, then he/she is given the opportunity to study at the residency for free and receive a scholarship. Secondly, night shifts are an obligatory part of postgraduate education. Thirdly, in the first year of postgraduate study, theoretical training takes 1/3 of the training time. The rest of the time is clinical work.

In Tajikistan, in order to work as a Pediatrician in Primary Health Care, a university diploma (on undergraduate education) does not give the right to work independently; without studying at the residency or internship it is necessary to study at least a one-year internship in Pediatrics. Although recently, employers prefer graduates of residency (two-years training). The faculty of General Medicine and the faculty of Pediatrics have already been combined at Avicenna Tajik State Medical University twice. This has led to a shortage of medical personnel in the field of pediatrics. Therefore, the government of Tajikistan recommended reopening the faculty of Pediatrics, which was done in 2014. Strengthening postgraduate education in pediatric disciplines can lead to an understanding of the uselessness of the faculty of pediatrics at the undergraduate level”.

- 2- Uzbekistan is a lower income country. The Pediatric Residency program lasts two years with the possibility of six non-mandatory additional months dedicated to subspecialty training (e.g. ED, neonatology). Residents have to pay for the specialization.
- 3- Tajikistan is the lowest income country. Residents not only are not paid but still have to pay for the specialization. They work on night shifts to overcome the expenses. The duration of the Residency Program is two years, with the first year mostly dedicated to theoretical activities.

Although the 3 countries share some common problems in the organization of undergraduate and postgraduate Education and Health, the economic burden for the 2 lower income countries is more difficult to overcome.

To summarize:

- The Primary Care Pediatricians pass directly from the Pediatric Faculty to clinical practice at the Health Centers, without any further training.
- The hospital based Secondary Pediatric Training is also short, at around 2 years of residency.
- The Tertiary subspecialisation is even shorter taking place after the 2 years of hospital training, and lasting 6 to 12 months

Another relevant issue is that some area of Pediatrics, such as Infectious Diseases and Neonatology, are not included so far in Pediatric training and are departments physically and clinically separated from Pediatrics.

As might be expected, this causes a very limited clinical exposure for Pediatricians, particularly in the diagnostic decision making of a feverish child or an ill infant baby. The lack of experience in such cases leads to significant lack of knowledge and skills in those areas.

4.1.2 Exam results

1- MCQ Exam

Multiple Choice Questions (MCQ) Test from the European Pediatric Exam were answered in English, between 60 and 120 min. The MCQ part of the exam was based on 50 'Single Best Answer' questions with 5 choices of which only one was correct.

The questions were developed by Liviana Da Dalt and Ana Neves and were selected from the questions of the European Exam in Pediatrics. They were reviewed and approved by the President of the Board of Pediatrics of the UEMS Pediatric Section, Dr Robert Ross Russell.

There were 7 candidates from the 3 countries to the Assessment. Some of the 7 initial candidates had problems with their knowledge of medical English, and struggled to understand the questions. Additional oral explanations were necessary. A medical translator was present and helped two residents. One of the residents from Tajikistan was not speaking English at all and had to be excluded from the assessment list.

Six candidates were selected at the end. Among the 6 candidates considered, 5 were residents (4 from the 2nd year, 1-resident of the 1st year) and 1 student of the 3rd year.

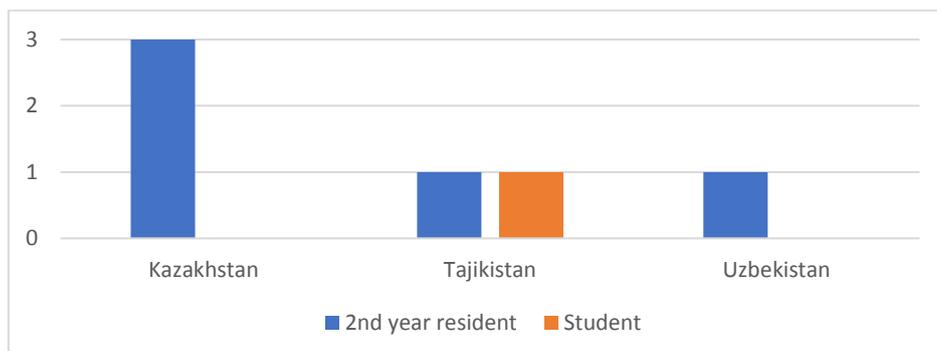


Fig. 21 – Exam candidates in Pediatrics

Exam results were in general low with a median value of 40,7% (24 correct answers out of 50).

Only 2 out of 6 trainees both from Kazakhstan reached the threshold >50% (>25 out of 50 questions; one candidate scored 31/50 (62%) and the other 33/50 (66%)), with overall results among the 6 candidates ranging from 24% to 66%.



Fig. 22 – Assessment results

According to European standards, 4 (67%) of them would fail the exam.

Median scores for each country were as follow: 52% for Kazakhstan, 29% for Tajikistan and 30% for Uzbekistan.

2 - Oral discussion

Oral discussion of the questions was done. Pediatric training details and health system organization was also discussed. Only 2 of the residents, both from Kazakhstan, were fluent in spoken English. All of them were fluent in Russian.

These residents were very interested and participated actively in the discussion of the questions and clinical cases and again they were quite at ease to intervene. They were also able to discuss International Guidelines (such as on Asthma).

Every candidate demonstrated a strong desire to complete part of their training in Western countries (for example by participating in Erasmus programs) to update knowledge, skills and competencies in Pediatrics and to improve their English. They also strongly wish to be able to access medical literature through dedicated websites and databases such as Medline and Pubmed.

4.1.3 Summary and conclusions

Overall, the performance at the exam was very low, below 50%.

Kazakh candidates with more time and paid residency had much better results, showing that they were on the right track. Both Uzbek and Tajik candidates performed poorly.

The system of Pediatric training needs to be prolonged at least 1 or 2 more years particularly in the areas of Neonatology, Pediatric Infectious Diseases and Intensive Care.

Some recommendations:

1) Payment for residents, being already medical doctors, essential in order to be possible to increase the duration of training.

2) Extend the training duration at least 12/18 months more, on the following areas:

- 3 months of Intensive Care Neonatology
- 3 months Neonatology
- 3 months Pediatric Intensive Care
- 3 months Infectious Diseases
- 1-3 months of laboratory medicine and ultrasonography

Kazakhstan would pass from 2,5 years to 4 years with a total of 4 years of Pediatrics plus 2 of subspecialty. Uzbekistan and Tajikistan would pass from 2 to 3-4 years. The common trunk structure could be adapted to the local reality. Primary Care Pediatricians (lack of) training needs further discussion.

3) English skills improvement

4) Exchange of professors and residents (Erasmus Program?)

5) Access to international literature (Medline and PubMed)

4.2 Pediatric Surgery Assessment

UEMS assessors in Pediatric surgery, prof. Piotr Czauderna and Udo Rolle

The Section of Pediatric Surgery of the European Union of Medical Specialists (UEMS) participated in the evaluation visit in Bukhara, Kazakhstan in September 2019. Section's delegation consisted of two members: prof. Piotr Czauderna (Gdansk, Poland), who is the Section's President and prof. Udo Rolle (Frankfurt, Germany), Section's Treasurer and Secretary.

The visit consisted of meetings with Kazakhstan, Tajikistan and Uzbekistan delegations, as well as of interviews with 7 pediatric surgery trainees from Central Asia countries, and additionally performing a mock pediatric surgery specialization final exam (in the form of MCQ, followed by oral exam), in order to test the theoretical knowledge of candidates. All together 7 trainees participated in the effort: 3 from Kazakhstan, 2 from Tajikistan and 2 from Uzbekistan. They represented various levels of training, including one colleague who has just completed it.

In preparatory phase of the visit the delegation studied document presenting organization of the training system in the three above mentioned Central Asia countries.

4.2.1 Organization of the pre- and postgraduate education

Pre- and postgraduate education in pediatric surgery in Central Asia differs in several aspects from classical western European training.

First, in medical studies general medicine and pediatric curricula are separated from the very beginning, i.e. the first year of medical studies. This solution has been a heritage of the Soviet medical education system and is virtually unknown to western world. Trainees complained about insufficient inclusion of practical aspects into their pre-graduation curriculum.

Second, pediatric surgical training is much shorter than in Europe. In most European countries a standard training lasts mandatorily at least 6 years (19 states) and - only in some - 5 years (8 countries), while in Kazakhstan and Uzbekistan the training lasts 3 years, and in Tajikistan only two years. This seems to be clearly insufficient in order to train pediatric surgeons who will be able to work independently.

European Pediatric Surgical Training

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Additionally, practical aspects of training are limited to very simple procedures only, which are performed by trainees themselves, e.g. herniotomy, orchiopexy, circumcision, appendectomy and pyloromyotomy at most. What is even more concerning, these operations are performed in small numbers. Interviews revealed that an average trainee performs only 50-80 procedures in his/her training period. One of the trainees did not perform a single operation during his whole first year of training! None of the people interviewed performed any standard abdominal operation, i.e. bowel anastomosis or stoma formation.

This is to some extent compensated by the fact that trainees assist a lot to their older colleagues / consultants. However, all trainees uniformly complained about the lack of dedication into training from their surgical tutors. This probably results, at least to some extent, from the fact that mentorship remains unpaid. Practical training seems to be completely unstructured and little supervised. There is also a disproportion between trainees and their tutors with 8:1 ratio in some cases.

Central Asia training programs also lack proper evaluation, as well as trainees' progress monitoring, with corrective interventions undertaken in individual cases.

Another common complaint was the lack of exposure of trainees to ultrasonography and proper interpretation of medical imaging, considered an important diagnostic and therapeutic adjunct. Same applied to laparoscopy, which required a separate educational course of several months after completing pediatric surgical training, while in Europe it is considered just another technique, which every pediatric surgeon should be familiar with.

Another problem is that training is limited to basics of pediatric surgery and abdominal surgery only, since neonatal surgery, pediatric thoracic surgery, urology, neurosurgery (including head trauma) and traumatology of the muscular-skeletal system are not a part of the formal training. Neonatal surgery, pediatric thoracic surgery and laparoscopy are taught over a short additional training, lasting usually 6-8 months.

Some specialties are trained under adult specialists' supervision with some pediatric elements included, i.e. urology and neurosurgery. This seems to be again a heritage of the former Soviet medical education model. Of course, some European pediatric surgery training requirements do not include urology or fractures management, yet still basic knowledge in these fields is mandatory.

Unluckily, the situation in Central Asia leads to development of professionals with very limited overall knowledge in pediatric surgery and with limited capabilities on diagnostic and treatment intervention before referring the patient to a proper sub-specialist. This leads to knowledge gaps and may create several potential problems with the quality and adequacy of medical care considering vast territories of Central Asia countries.

Additionally, interviews with representatives of the pediatric surgery from three Central Asia countries revealed that the most conceived training system weaknesses are:

- Lack of access to evidence-based medicine.
- Lack of training in international medical literature consultation.
- Lack of interaction with medical schools abroad.
- Lack of foreign languages knowledge.

This clearly mirrors the lack of structured evidence-based approach in training, as well as insufficient knowledge of foreign languages to utilize modern e-learning tools, like medical literature mining and critical interpretation of medical data.

A separate, but very important, problem is a model of funding of the training system. In most cases trainees are not only self-funded receiving no formal salary but also paying their tuition fees which seem to overcome annual doctors' income. This of course makes very difficult to extend training duration from the point of view of young doctors' economical welfare. For example, only about 30% of trainees are paid in Uzbekistan and Tajikistan. In Kazakhstan (the richest of all three countries) about 80% of trainees are government funded. However, there is a price to pay, when the person is state-funded he/she has to spend 2 or 3 yrs in remote areas working as a general practitioner. An average tuition fee for training is 1200-1500- US\$; for those who receive free training and are officially paid, the monthly trainee's salary is from 60-70 \$ in Tajikistan to 150-200 \$ in Kazakhstan. That includes night shifts which remain unpaid. Others have to pay for their training and receive no salary at all. In fact, several trainees are a sort of "slaves" to the system and to their consultants.

Moreover, residents are unevenly spread throughout training years, for example in one of the Kazakhstan centers there were only 2 trainees in the first year of training, 14 in second year and 8 in third year, which is an example of poor planning adversely affecting training quality.

4.2.2 Exam results

MCQ part of the exam was based on 50 questions with 5 choices each, one only being correct. Selection of questions was based upon European examinations in pediatric surgery. Several candidates had problems with sufficient knowledge of English to understand and interpret questions properly; additional oral explanations in English or in Russian were commonly necessary. Colleagues from Tajikistan required the help of a medical translator.

Exam results were uniformly below expectations. Only 2 out of 7 trainees (one from Kazakhstan and one from Tajikistan) reached the threshold >50% and in both cases it was marginally achieved: by 2 and 3 points only. According to European standards they would fail part I exam. Median scores were as followed: 25 points for Kazakhstan, 26 for Tajikistan and 23 for Uzbekistan.

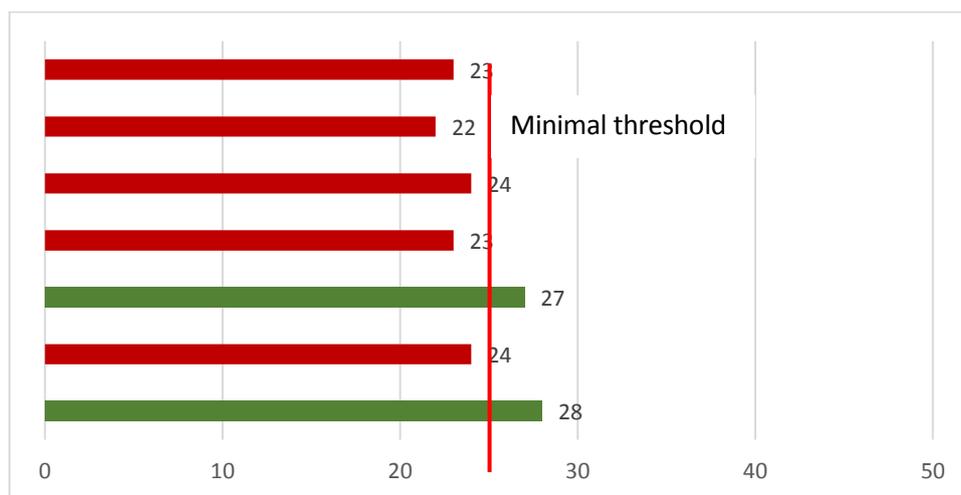


Fig. 23 – Assessment results

Oral exam followed, which showed lack of knowledge of candidates on modern approach to several areas including conservative treatment of blunt abdominal trauma (especially concerning spleen injuries), as well as modern surgical techniques (i.e. Fowler-Stephens approach to impalpable testis) and true nature of pediatric

surgical emergencies (i.e. midgut volvulus). Candidates were also unaware of pathophysiology and epidemiology of common and important pediatric surgical conditions (i.e. congenital diaphragmatic hernia or esophageal atresia).

4.2.3 *Summary and conclusions*

Training system in pediatric surgery in selected Central Asia countries (Kazakhstan, Tajikistan and Uzbekistan) seems to be problematic. This has been confirmed by interviews with trainees, official data provided, results of the mock exam, as well as direct results of the comparison between European and Central Asian training systems.

Training system in Central Asia remains unsystematic and fragmented, with little supervision from tutors and lack of feedback to trainees. It is also too short (of 2 or 3 years duration) and does not include sufficient practical teaching. Theoretical knowledge is not sufficiently grounded. Operative records of procedures performed by trainees independently or under direct supervision are way below any European thresholds, with less than 100 simple cases performed throughout the training period.

By no means such organization of the training allows for education of a properly qualified pediatric surgeons with an appropriate theoretical knowledge and practical skills to practice independently.

Thus, in our opinion, Central Asia training system and curriculum require deep changes and in fact should be completely reorganized.

Some recommendations:

1. Extend the training period to a minimum of 4 years.
 - a. This arrangement requires, however, the trainees to be paid in 100% of their number by the government funds. Otherwise, prolonged training will become an unbearable financial burden to candidates.
 - b. Abandon tuition fees paid by trainees or organize long-term, state-guaranteed loans to pay them.
2. Structure the training to include better supervision from tutors and direct feedback to trainees with periodic evaluation of their progress.
 - a. Consider an introduction of the payment scheme for tutors in reward for the care over trainees.
 - b. Start mutual periodic evaluations: trainees by tutors and tutors/training centres by trainees.
3. Include elements of theoretical and practical knowledge in several key areas for pediatric surgery, i.e.: newborn surgery, pediatric urology, pediatric thoracic surgery, trauma, elements of neurosurgery, etc.
 - a. These can be taught over mandatory courses introduced into the training curriculum.
4. Consider exchange of trainees between hospitals, including rotation in smaller centres, which might allow for acquisition of better operative skills, as well as getting familiar with other than own approaches. Consider international visitorships, if possible, too.
5. Introduce elements and teaching of: evidence-based diagnostic/treatment approaches, on-line medical literature mining and critical interpretation of data.
6. Organize obligatory English language courses for trainees in order to improve their international communication and e-learning skills.

4.3 Pediatric Neurology Assessment

UEMS assessors in Pediatric Neurology, prof. Tiago Proença dos Santos and Paolo Mazzarello

The Child Neurology delegation consisted of two members: Dr. Tiago Proença dos Santos (Lisbon, Portugal), child neurologist and vice-president of Portuguese Society of Neuropediatrics and Prof. Paolo Mazzarello (Pavia, Italy), Neurologist and professor of University of Pavia.

The group of experts made an evaluation visit in Bukhara, Kazakhstan from 10th-13th September 2019. The visit had as objectives to understand the local curriculum in the several Pediatric fields, compare the structure with the European, and identify the areas that could be improved.

Child CA was structured for finding solutions and not to emphasize problems that are present in any medical curriculum. The project will focus on the development of a new set of contents for post-graduate pediatric training, in order to harmonize the Central Asian system between them and in line with the European Union standards. All the partner countries are collaborating on the draft of updating curricula that will be implemented in each country of the project.

The main goal is in a smooth way modernize the Central Asian Pediatric curricula and improving children care helping to reduce infant mortality and improve life expectancy.

The visit was divided into two different parts.

First part: It was thought together an approach strategy to adapt the local curriculum to the European curriculum. The training system in the three above mentioned Central Asia countries was studied with all the local particularities identifying the weakness and strengths.

Second part: Mock neuropediatric specialization final exam (in the form of multiple-choice questions, followed by oral exam), in order to test the theoretical and practical knowledge of candidates. All together six trainees participated in the effort: 2 from Kazakhstan, 3 from Tajikistan and 1 from Uzbekistan. They represented various levels of training.

4.3.1 Organization of the pre- and postgraduate education

Pre and postgraduate education in child neurology in Central Asia differ in several aspects from classical western European training.

At the root of the differences is the specificity of having a university course in pediatrics in these countries. This course is different from the general medicine curriculum from the beginning, and has been a heritage of the Soviet medical education system.

In this model, even now the medical school has a huge theoretical background and little practical experience. After the university, the internship maintains a very heavy theoretical component and there is a very low autonomy. It was agreed that the length of internship is fundamental to enable pediatric graduates in their practical exercise.

After the graduation, the Neuropediatric internship is made in a completely separated curriculum of general pediatric. Since the beginning the formation is emphasized just for neurologic and behavior pediatric diseases; as a separated specialization is much shorter than in all Europe. In most European countries a standard training of 5 years in general pediatrics is followed by two extra years to become a neuropediatrician. Some countries have neuropediatrics as a separated specialization since the beginning, but in these Countries there are 5 general years followed by a sub-specialization. In Kazakhstan, Tajikistan and Uzbekistan the training lasts two years: this seems insufficient to form a general pediatrician, so it is manifestly insufficient for the formation of a pediatric neurologist, that should have a solid formation in general pediatrics and in general neurology. A big part of the most severe pathologies in child neurology mixture and make differential diagnosis with areas of psychiatry, infectious disease, intensive care, neonatal, rheumatology and so on: it is therefore impossible to manage those patients just focusing only in neurological signs and symptoms.

In addition to insufficient time, there is still an excessive theoretical load during residency. The practical component is small, with little autonomy and a ratio between specialists and interns that does not allow the discussion of cases and necessary training in semiology, diagnostics and therapeutic discussion.

During this period there are no individualized evaluative moments, the study is based on textbooks mostly in Russian and the curriculum does not have a compulsory research component. These factors do not allow for organized systematization and condition outdated in a rapidly expanding specialty such as Neuropediatrics. The lack of English knowledge of most inmates makes it impossible to access evidence-based medicine and make it impossible to consult online study and research resources.

Another common complaint from residents of the three countries concerned the need to pay tuition fees for the residency attendance, with no salary in this period. Everyone acknowledged that the lack of autonomy and accountability in practical work made it difficult for them to get paid. Probably it should be thought a model closer to the Western that would allow a longer formation, but with fair wages in relation to the complexity of the function.

4.3.2 Exam results

The evaluation of the residents was done in two stages, a multiple-choice question (MCQ) exam and a practical interview with discussion of clinical cases and evaluation of videos and auxiliary diagnostic exams of real patients.

MCQ was based on 42 questions with 4 to 5 choices each, being right only one.

Selection of questions was based in examination questions from neuropediatrics fields in general pediatric examinations. Several candidates had problems with sufficient knowledge of English to understand and interpret questions properly. Usually, additional oral explanations in English or in Russian were necessary; it was required the help of a medical translator.

Exam results were uniformly below expectations. Only 1 out of 6 trainees (from Kazakhstan) reached the threshold >50% and it was marginally achieved. According to European standards they would fail part I exam. Median scores were of 40% Uzbekistan and Kazakhstan and 30% for Tajikistan (see fig. 23).

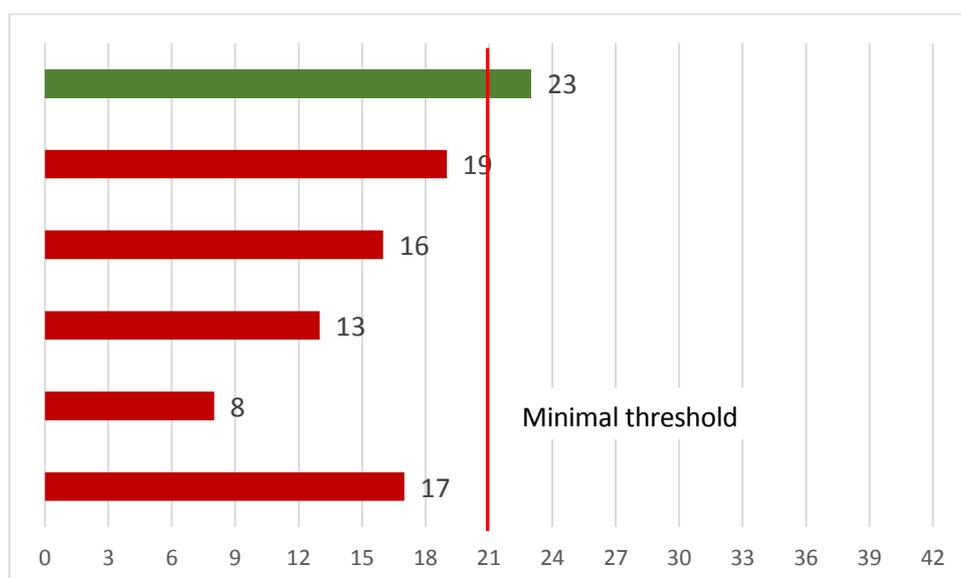


Fig. 24 – Assessment results

Oral examination was very difficult because of a lack of proficiency in English from the residents. Only one of the residents, was fluent in English; they all were fluent in national languages and Russian. We need the support of a translator.

All the interviewed residents were very interested in child neurology and seek for knowledge to better help their patients. They actively participated in the discussion of the questions and clinical cases and were particularly fascinated with clinical cases presented with video records. They generally understand that to access to International Guidelines they need to improve their English skills.

There is an interest of joining international scientific organizations and go for a period of practice in western European countries for developing of skills and updating knowledge.

Unfortunately, the scientific discussion was not so pleasant: it showed lack of knowledge of candidates on some basic semiology procedures and difficulties in interpretation of neurologic examination. Most failed to diagnose common pathologies, making the mistake of hierarchizing complementary diagnostic tests. Therapeutic options were in most cases out of line with evidence-based options.

The lack of knowledge was particularly striking regarding research using molecular genetics, MRI and biochemical investigation. Given the results, we never discussed more complex clinical situations such as neurodegenerative, neurogenetic or metabolic diseases.

From the oral interview we could notice that the Kazakhs had much better results, showing a better understanding of international guidelines and a more organized approach to patients.

4.3.3 *Summary and conclusions*

Training system in child neurology in selected Central Asia countries (Kazakhstan, Tajikistan and Uzbekistan) seems to be very distant from the minimum standards in a developed country. This opinion started to be constructed during interviews with trainees and analyze of official data provided about the training system, and was fully confirmed during the oral and mock exam.

Training system is too theoretical, unsystematic and fragmented, with little supervision from tutors and lack of evaluation or feedback to trainees. Besides, the theoretical knowledge is not sufficiently supported with a scientific evidence, and the study should be organized on the basis of the more recent international bibliography.

The most obvious problem is the fact that the residency is organized in too a short period (2- or 3-years duration) and does not include sufficient practical teaching, with a progressive autonomy. The number of patients seen by trainees independently or under direct supervision are way below European thresholds. Scanty experience acquired in very complex diagnostic exams like genetic studies, MRI, EEG and EMG do not give any possibility to interpret these exams, fundamental in the Child Neurology of the XXI century.

Thus, in our opinion, Central Asia training system and curriculum require deep changes and in fact should be completely reorganized.

Some recommendations:

1. Extend the training period to a minimum of 4 years.
 - a. This arrangement requires, however, the trainees to be 100% paid. To justify these investments, the residents should assume more responsibility and progressive autonomy. It is mandatory an increase of self-study during the residency and a structured continuous independent evaluation of the residents to achieve the goals of a Neuropediatrician.
2. Adapt the Neuropediatric syllabus (annex I) proposed by European Pediatric Neurology Society, using that document to structure the essential areas to experience theoretical and practical knowledge

during the residency (for example: neurophysiology, neuro imaging, metabolic disorders, neurogenetics, child psychiatry, epilepsy, neuromuscular disorders, etc.)

3. Structure the training to include better supervision from tutors and direct feedback to trainees with periodic evaluation of their progress.
 - a. Consider an introduction of some sort of advantage/payment for tutors in reward for the care over trainees.
 - b. Start mutual periodic evaluations: trainees by tutors and tutors/training centres by trainees.
4. Include elements of theoretical as independent periods apart from the residency, that could be organized as mandatory courses introduced into the training curriculum.
5. Consider international visitorships of trainees to international centers to get expertise in some very specific pathologies.
6. Consider international change of professors. Some of Central Asia tutors could update some areas in a reference center, and professors from recognized centers could be for a period in local services helping them to organize some fields.
7. It should be promoted a local organization of all the Child Neurologist from the 3 countries to develop protocols, discuss clinical cases and promote research.
8. All the child neurologists should be incentivized to join to international organizations of Child Neurology for updating and changing of experiences.
9. Introduce elements and teaching of: evidence-based diagnostic/treatment approaches, on-line medical literature mining and critical interpretation of data.
10. Organize obligatory English language courses for trainees in order to improve their international communication and e-learning skills.

5 Conclusions and recommendations

5.1 General overview

Erasmus+ capacity building projects have been devised to “...*help higher education institutions from partner countries to develop, modernize and disseminate new curricula, teaching methods or materials, as well as to boost quality assurance and governance of higher education institutions... [aiming at] improve skills, modernize higher education systems and institutions, and create better partnerships between the EU and education systems across the world*”. One of the aims is therefore to spread the “European views” on educational issues: considering the situation of Pediatrics training, we must observe how the European standard and the Central Asia standard clash dramatically.

Actually, in Europe the teaching system is organized in pre-graduate school in general medicine for 6 years, followed by postgraduate specialized training for 5 or 6 years (4 years in few instances). Central Asia system is fully mirroring a legacy of the old Soviet system, foreseeing a complete separation between pediatric and adult medicine since the very beginning of medical studies: “*The issues of maternal and child health have received special attention in the Soviet healthcare system from its very beginning, adult and child healthcare were separated, and special highly qualified child doctors (pediatricians) were being trained. For the first time in the world, medical faculties of universities began the training of child doctors in 1930 in the USSR. Pediatric education included special hours for teaching all medical subjects (anatomy, physiology, biochemistry, etc.) as applied specifically to children*”⁸. In Central Asia there are no “medical doctors” to specialize into “pediatricians”, but rather “non-specialized pediatricians” to further specialize in a two-year training course. We are therefore speaking of a 11 to 12 years vs a 7 to 8 years training system: quite a radical difference.

The first dilemma that the project has to discuss and to solve is: should we try to fully modify the system, proposing the abolition of the Faculty of Pediatrics and its merging into General Medicine, according to the system adopted in Europe as well as everywhere else in the world, outside the post-Soviet countries, or should we adapt our proposals to the existing situation, now approaching its first century of life and therefore extremely hard to modify? A respondent actually underlined “*The difference in the education systems, and therefore some standards that cannot be changed*”, possibly not realizing that with this system a primary care Pediatrician pass directly from the Pediatric Faculty to the clinical practice at the Health Centers, without any further training.

Such a radical modification in the system could be fully refused because too invasive, thus hampering the possibilities of developing the whole project. Separation among Faculty of Pediatrics and Faculty of Medicine is moreover seen as the least critical weakness by the majority of respondents, therefore it would be still more difficult to propose such a solution (“*do not touch traditional teaching methods*”); on top of that, it goes beyond the declared scope of the project, specifically devoted to the modernization of *postgraduate* medical training.

But also keeping the scope of the project within the field of postgraduate medical education presents quite a lot of problems. Using questionnaire’s results as a baseline for the future project development strategy we found ourselves in a blind alley: actually, many respondents strongly asked not to change anything in the system, and as many supported radical changes. The problem is that adding all the various answers we go >50% for both positions, and this is mathematically a problem.

Is a common feature of many respondents the fear of a ruthless and inconsiderate intervention from outside into an otherwise unknown system: “*We can’t achieve the desired consensus if the characteristics of each participant Country are not taken into account... lack of understanding of the local education system... non-compliance of educational programs with the country’s requirements... Possible neglect of local realities...*”

⁸ Alexander Baranov, Leyla Namazova-Baranova, Valery Albitsky, Natalia Ustinova, Rimma Terletskaya, Olga Komarova Pediatrics in Russia: past, present and future. Arch Dis Child 2017;102:774–778. doi:10.1136/archdischild-2015-310152

differences in knowledge and approach... mismatch of the social and financial level in the real life... no understanding of local mentality... making decisions without taking into account the characteristics of existing education, mentality, socio-economic and natural conditions of the country... distrust of older generation of doctors ... loss of our strengths in the medical education system"; to conclude with an ultimate: *"do not touch traditional teaching methods"*, variously declined as *"Do not argue with the traditional method"* and *"do not touch the previous type of training"*.

On the other hand, under many of the collected answers it is easy to gather strong expectations from the project itself, seen as the only way to change an obsolete system otherwise blocked on itself with no possibilities of a modification from inside: *"Use all forces for project implementation"*; *"Do not do a paper roll job"*; *"Make every effort for the implementation of the project"*; *"Organize so that it is accessible and effective to everyone"*; *"We need to introduce a European training system"*; *"For me there are no secondary opportunities. Each achievement for our country is important"*; *"Development of a new educational program for pediatricians at the postgraduate level as the most important goal of the project"*; and finally a strong call: *"Do not accept any threat during project implementation"* and *"I want to change everything"*.

All respondents anyway emphasize the strong wish for technological novelties, both in medical treatment and in teaching methods (*"Seminars conducted on new teaching technologies of learning"*; *"it's time to completely change the system"*; *"It is necessary to change everything"*) not considering that the teaching system cannot be separated from the underlying "teaching philosophy", and that to adopt new methods means also to adopt the very mentality that created these methods. This kind of "blending" the different cultures needs primarily a lot of carefulness and discernment. Actually, as mentioned few lines before, a common feature of all collected answers is a high expectation of what could come from an interaction with European partners, reaffirmed by the observation that the lack of interaction with medical schools abroad is felt as the worse weakness of the system. This desire of interaction, and therefore innovation, clashes with the repeated call for keeping alive the traditional system; from the recorded answer it is possible to find a lot of quest for new experiences and a lot of desire not to leave the old system: a somewhat lacerating mental attitude, nurturing both the wish for a new way and the fear to enter it⁹. Finding a compromise between these contradictory positions will be an awfully difficult problem to solve (by the way, is exactly what ChildCA is asked to do... and the ultimate reason for which this document and the underlying questionnaire have been conceived and drafted).

Anyway, a straightforward solution to this dilemma can be found in the very pages of this document, dealing not only with the questionnaire's analysis but also with the health general data of the partner Countries (see chapter 2) and with the interaction with trainees in Bukhara meeting (see chapter 4).

As detailed in chapter 2, neonatal and infant life mortality is ten times higher in CA than in Europe, and life expectancy at birth some 10 to 15 years lower. Of course, these differences derive from the whole socio-sanitary system and not only from the more or less brilliant performances of the medical professionals: but undoubtedly a well-prepared doctor can do a valuable job also with scarce resources, while a badly trained doctor will do disasters also in the best equipped hospital.

As detailed in chapter 4, interaction of medical trainees with the experts of UEMS (an organization external and independent from the project, as required by many respondents) disclosed a lot of details of paramount interest. In regards to that, we must express our gratitude to the 21 trainees accepting to take part to the project and to be "mock examined": their participation in the discussion during Bukhara meeting was extremely effective and constructive, regardless of their exams' results (consequences of a poor training system, rather than their poor competence). According to them, the two years of postgraduate training are mainly theoretical, poorly appropriate to prepare them to the profession and with taxes awfully expensive: just a price to pay to conquer a diploma allowing them to get a job, and only after that actually starting to learn how to do it. The dismal level of professional training received was certified by the mock examination results: only 5 out of 20

⁹ See also the relevant comment at page 33 about the position of Government officials of Tajikistan

trainees answered correctly to >50% of the questions (also if selected in the easiest range of European Exam questions' database), and only 1 out of 20 barely reached the minimal threshold needed to actually pass a European exam.

It is therefore clear that there is an urgent need to modify and update the whole system of postgraduate training in Pediatrics ("*...as a template for upgrading medical education in Central Asia*", as quoted in the project title, not only for Pediatrics!): it is in no way possible to limit our recommendations to some "cosmetic" changes in the curricula, but it is mandatory to propose a comprehensive structural renewal.

When dealing with children's health all compromises are dangerous, also if dictated by undeniable socio-economic contingencies.

5.2 Structural recommendations

- Postgraduate training in Pediatrics, Pediatric Surgery and Pediatric Neurology must be prolonged to a minimum of 4 years, being actually too difficult to adopt the European standard of 5 to 6 years.
- A prolongation to 3 years can be accepted only as a temporary solution, as it is now also in the Russian system ("*Russian medical university specialist's course graduates can opt for postgraduate studies rather than internship. They have to enroll in a post-graduate programme. Length of postgraduate study at Russian universities is three years*"¹⁰).
- This prolongation cannot be paid by the postgraduate students, considering also the disproportionate level of required taxes: postgraduate medical training has to be conceived as an investment for the Country, therefore needing to be substantially funded by the Government, and not as an optional left to the good will (and to the money) of the candidates. To this scope it should be introduced a system of trainees' payment for their activity in the training hospitals, possibly integrated by a program of "Honor educational loans" to be repaid by the trainee once entered in the professional life.
- To justify these investments the trainees should assume more clinical responsibility and progressive autonomy, actively cooperating with the hospital staff. Attendance to the training course must therefore be mandatory, as in every paid employment, freeing the trainees from the need to do ancillary jobs (night shifts, casual work) just to gather the money needed to pay tuition fees.
- Also the differentiation between "rezidentura" and "magistratura" is a legacy of the old Soviet training system with no correspondence anywhere else in the world, at least during the postgraduate training; optional programs of Doctorate (PhD) could be offered for those wishing to enter in the University medical education system or in advanced research, but only after obtaining the specialization degree. It is inconceivable to teach a topic without practicing it.
- Postgraduate training system has to be properly structured and supervised, with a reasonable tutor: trainee ratio of at the most 1:3; highest ratios do not allow any effective practical training, just allowing merely theoretical transfer of knowledge.
- Poor candidates' planning adversely affects training quality. Every training Center has to define the maximum number of trainees it can accept, according to the number of trainers/tutors and to the medical workload available for training, and this total number has to be evenly distributed among the years.
- Trainers and tutors must be constantly updated and motivated, to avoid disaffection and "*thinking the old way and not being ready to accept new methods of learning*". This process should include also a proper recognition of their educational activity, both from career and salary point of views, as well as facilitations for stages abroad, e.g. through Erasmus teachers' exchange program.

¹⁰ <https://studyinrussia.ru/en/actual/articles/medical-education-in-russia/>

- The same approach should be adopted also to foster international exposure with mutual exchange of teachers for conferences, master classes, updating courses, articles, visitorships of trainees to international centers to get expertise in some very specific pathologies.
- Access to international scientific literature must be provided for free to all training Centers, not to have it “*depending on the doctor’s budget*”.
- Training centers should take the lead in improving the existing continuing education programs for doctors and the continuing professional education system in general.

The possibility of tutors’ and trainees’ exchanges with Europe and other Countries is among the most popular requests detailed in the questionnaire: it must however be pointed out that an exchange “*au pair*” is possible only among systems of compatible standard, otherwise it will be completely useless. A system organized in two years training cannot be compatible with one organized in five years; moreover, specialist trained in a significantly shorter time than their colleagues in Europe could not have a scientific background of a level enabling them to join ongoing European medical researches.

On top of that, as far as Uzbekistan is concerned, reliable information obtained in Tashkent reveal that it is planned in the near future the creation of a medical school organized and run in the capital city by Koreans, according to Korean standards of 4 to 5 years postgraduate training. If the Uzbek postgraduate training system will not be updated, we will have soon in the Country “*first class*” and “*economy class*” medical specialists...

5.3 Curricular recommendations

In this paragraph we will summarize all the recommendations proposed in this document, to be utilized for the drafting of an “*ideal*” CA curriculum, by and large based on European standards, to be thereafter adapted and adopted by each Country and each involved specialty according to the factual situation.

Every curriculum should be based on three main chapters:

- 1) **organization** (common to the three specialties): minimum 4 years; residents paid by the government; no separation between residency and master (in the EU it is not possible to teach pediatrics without practicing pediatrics).
- 2) **structure** (different for each specialty): modular structure, increasing complexity structure of the training (from the general to the more specialized). For example, 2 years of general pediatrics and 2 years for pediatric subspecialties.
- 3) **content**: different for each specialty (see below), with a common core for all, namely:
 - a. Medical English course. With no working knowledge of the international scientific language it will be impossible to access the most advanced medical literature and guidelines, online training, online international patient consultation.
 - b. Strengthening the role of evidence-based medicine, widespread introduction and implementation of internationally acknowledged clinical protocols.
 - c. On-line International medical literature data mining. The web can be a valuable source of updated medical knowledge, to improve doctors' access to evidence-based medicine, online training, pediatric research, but its utilization implies critical interpretation of retrieved data and cannot be tackled “*en amateur*”.
 - d. Deontology, bioethics, development of intuition and logical thinking to avoid “*Passivity of the young doctors themselves*” and “*not responsible attitude to work*” as reported by some respondents.
 - e. Communication abilities, with parents, patients and colleagues.

New curricula must plan the introduction and inclusion of new educational technologies in the process; e.g., to study anatomy is better to resort to morgue and corpses for dissection (now in Europe no more available), as suggested by some respondents, or to utilize the virtual anatomic table (Anatomage®)? Simulation based training should be therefore fostered, financed and implemented.

5.3.1 *Theory vs practice*

Many questionnaire's respondents praised the good balance among theoretical and practical training, evaluated as the one of the most valuable strengths of the system. But shortly after a lot of answers (and all interviewed trainees) blamed an excessively theoretical training, proposed to reduce lecture hours in humanities and begged for a more practically-oriented training, inducing to the conclusion that this is far from being optimal.

Again in the field of theory vs practice, some answers went straight to: "*From the first course learning to practice in primary care and hospitals*". This observation could be accepted if related to postgraduate studies, but could be extremely dangerous if related to the undergraduate studies, fostering the training of good "medical technicians", with a good dexterity but fully ignorant of the meaning and the rationale underlying their medical actions. Criticism to the excessively theoretical curriculum or to the "*excessive content of theories in books*" could reveal either that the practicalities are just praised and not actually adopted, or that what is taught is really pure theory separated from the underlying human being needing to be treated.

A possible solution could be a revision of the theoretical content of the undergraduate curriculum, to shift in the first years of training a sound preparation on the basis of anatomy, physiology, pathology, avoiding the temptation of being too "practice oriented" since the beginning but reserving this attitude to the postgraduate training that should be the really professionalizing one, where the main educational activities should be done at the children's bedside or in the surgical theatre. Otherwise the risk (actually, what in facts happens today, at least according to the interviewed trainees) is to teach some rudimental practicalities to students not yet prepared to fully understand what they are doing, and to teach only theoretical basics to graduated doctors needing on the contrary to become fully independent professionals, thus postponing this task to a "on the job training", possibly in a remote hospital with no expert supervision available, with all related and relevant risks for the patients.

Introduction of simulation centers, as wished for by a lot of respondents, could help significantly in this direction.

5.3.2 *Pediatrics curriculum*

One of the main characteristics of the actual pediatric care system in CA seems to be a fragmentation of competences, starting from the very beginning of medical studies (Pediatric Faculty vs General Medical Faculty) and going on thereafter, with neonatology, pediatric infectious diseases, pediatric intensive care each one splitting out from the main pediatric core and going on its own way. It is a shame that in this way a severely feverish newborn could be treated by each one of the abovementioned specialists, expert only in his/her own specific field, with scarce updated knowledge on the others, unfortunately equally essential for a proper approach to the child's pathology. This is exactly the attitude opposite to the actual mantra of western medicine, fostering the need of a holistic approach to the patient and avoiding as an heresy parceling out each one of his/her pathologies.

A modern postgraduate curriculum in Pediatrics must therefore take into account ALL aspects of child pathologies, offering a sound common trunk as an essential basis from which to stem (and not to split from the very first year!) possible subspecialties.

It is therefore proposed a Pediatric curriculum of 4 years, to be divided in a common trunk (2 or 3 years) followed by a subspecialisation period (1 or 2 years). A modular organization of the courses could help to achieve this goal.

Common trunk in Pediatrics, on top of the subjects already planned, should include:

- 3 months of intensive care neonatology
- 3 months of neonatology
- 3 months of intensive care
- 3 months of infection diseases
- 1-2 months of laboratory medicine

5.3.3 *Pediatric Surgery curriculum*

- Pediatric surgical curriculum should include as mandatory courses elements of theoretical and practical knowledge in several key areas for pediatric surgery, (i.e.: newborn surgery, pediatric urology, pediatric thoracic surgery, trauma, elements of neurosurgery, etc.).
- Laparoscopic techniques should not be taught as a separate educational course, but should be considered just another surgical technique, which every pediatric surgeon should be familiar with.
- Ancillary teaching should be added for ultrasound, imaging interpretation, medical law.
- Every trainee should have adequate exposure to surgical activities to be performed as first surgeon, in a number to be defined according to the local and European standards, and to be duly recorded in a logbook detailing all trainee's surgical experience.
- A program of trainees' rotation between hospitals, including smaller centers, should be organized in order to allow for acquisition of better operative skills, as well as getting familiar with other than own approaches.

5.3.4 *Pediatric Neurology curriculum*

- Pediatric neurology, although in Europe an independent specialty (under the name of Childhood Neuropsychiatry), should not be separated from Pediatrics but should share two common years with pediatrics and neurology, and then go on with two further years fully devoted to pediatric neurology and psychiatry, to offer to all pediatric neurologists a solid formation in general pediatrics and in general neurology.
- Adapt the Neuropediatric syllabus proposed by European Pediatric Neurology Society, using that document to structure the essential areas to experience theoretical and practical knowledge during the residency (for example: neurophysiology, neuro imaging, metabolic disorders, neurogenetics, child psychiatry, epilepsy, neuromuscular disorders, etc.)
- Include elements of theoretical neurology as independent periods apart from the residency, that could be organized as mandatory courses introduced into the training curriculum.

5.3.5 *Students assessment*

Trainees' testing method turned out to be one of the most critical problems emerged in the survey.

MCQ system does not seem to gather particular appreciation, being quoted as one of the worse criticalities. Nevertheless, detailed comments on this issue in the questionnaire ("*...a student skipping heavy studies and learning tests answers in one day, the day after the test he does not remember anything about the subject and has zero in practice... Tests should not be the main evaluation criteria in medicine*"; "*test mode with little clinical thinking*") raises some doubts on the adopted MCQ methodology. If it is possible to learn by heart in a short period (well, let's consider a bit more than one day!) all the questions, or if these questions do not imply any clinical and critical reasoning, it means that the MCQ database is very reduced and poorly conceived.

Almost all European Examinations run by the UEMS include MCQ (also as a "best answer among many possible") as a first part, almost always followed by a second part based on oral examination, in order to assess candidate's knowledge not as mere notionism, but as attitude to clinical and critical reasoning in objective structured clinical examinations (OSCE).

It must be moreover considered that examinations are not only summative (= to evaluate knowledge at the end of an educational process), but also formative (= to evaluate student's progress during the educational process, to address possible criticalities and to improve the whole process also from teacher's side). Postgraduate training should therefore be organized to include better supervision from tutors and direct feedback to trainees with periodic evaluation of their progress.

Periodic evaluation should be mutual: trainees by tutors and tutors / training centers by trainees.

6 References

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7 Appendix 1 – Questionnaire format

QUESTIONNAIRE ON POSTGRADUATE TRAINING IN THE FIELD OF CHILDREN CARE MANAGEMENT IN CENTRAL ASIA

A group of Universities of Kazakhstan, Tajikistan and Uzbekistan, in cooperation with Universities from Italy, Germany and Poland, are jointly realizing an Erasmus Plus Capacity Building in Higher Education project funded by the European Union and started in February 2019.

Aim of the project is to support the modernization, professionalization and internationalization of postgraduate training in the field of children care management in Central Asia (CA), sharing expertises in the fields of Pediatrics, Pediatric Surgery and Child Neuropsychiatry postgraduate training. It is a joint project organised as a feasibility study to become a structural project for a sustainable and long lasting improvement in the organisation of postgraduate medical training in CA countries, not only in paediatrics but also in other fields of medicine.

The project will emphasise the importance of children care, thus contributing to reduce the infant mortality through an updated approach to the teaching of modern techniques of neonatal and paediatric care, widely resorting on the tools made available by ICT. Further spin offs will be to enhance CA HEI relevance in the international scenario of scientific research and to improve their International Offices through an “on the job” interaction.

Outputs will possibly be improved curricula and modern training strategies devoted to an integrated care of the child, harmonised with those adopted in EU countries and aiming to achieve the same results. Ultimate impact will hopefully be a reduction in infant mortality and a substantial increase in life expectancy at birth for the populations of CA Countries.

Since the construction of a curricular project constitutes a process of meditation and decision-taking which will finally determine the quality of professional preparation of the trainees, we deemed mandatory to perform a thorough analysis of the situation and needs through a questionnaire, to allow the collection of information on the vision and needs of the involved stakeholders (academic staff, teachers, students, professional associations, education and health authorities).

The questionnaire is organised in 4 sections according to the SWOT system (Strengths, Weaknesses, Opportunities, Threats).

We therefore kindly ask you to fill the attached questionnaire, in a strictly anonymous way, whose results will be conveyed in a ‘Baseline document for a CA curricular proposal for the professionalization of children care management’.

Our warmest thanks for your support.

*Required



Co-funded by the
Erasmus+ Programme
of the European Union

Which is your Country ? *

Mark only one oval.

- Kazakhstan
- Tajikistan
- Uzbekistan

What is your status ? *

Mark only one oval.

- Education authority
- Health authority
- Academic faculty - Pediatrics
- Academic faculty - Pediatric Surgery
- Academic faculty - Childhood neuropsychiatry / Pediatric neurology
- Neonatologist
- Pre-graduate student
- Post-graduate student
- Option 9
- Other:

How many years lasts the course in pediatrics (pregraduate) ? *

Mark only one oval.

1 2 3 4 5 6

How many years lasts the course in pediatrics (postgraduate) ? *

Mark only one oval.

1 2 3 4 5 6

The course of pediatrics accounts for how many hours of teaching per year : *

Mark only one oval.

- 100-150 hours
- 150-200 hours
- 200-250 hours
- 250-300 hours
- > 300 hours

The practical teaching (bedside teaching) accounts for: *

Mark only one oval.

- less than 50% of the course
- 50-75% of the course
- more than 75% of the course

The bedside teaching is conducted in the following manner: *
Mark only one oval.

- 1-2 students per doctor
- 3-5 students per doctor
- more than 5 students per doctor

How many doctors teach one student during one year: *
Mark only one oval.

- 1-2 doctors
- 3-5 doctors
- 5-10 doctors
- more than 10 doctors

Is there any obligatory list of procedures to learn during practical exercises? *
Mark only one oval.

- No
- less than 5 procedures
- 5-10 procedure
- more than 10 procedures

How many children are seen by student per year? *
Mark only one oval.

- less than 25
- 25-50
- 50-75
- more than 75

What is the method of student examination? *
Mark only one oval.

- oral exam
- written exam
- multiple choice test
- OSCE

Can students decide about content of the course? *
Mark only one oval.

- No
- less than 10% of the total course time
- 10-20% of the total course time
- more than 20% of the total course time

STRENGTHS

Strengths in SWOT analysis are the attributes within an organization that are considered to be necessary for the ultimate success of a project. Strengths are resources and capabilities that can be used for competitive advantage.

What do you consider as particularly effective in the medical training system today adopted in your Country? (1 = not effective at all 10 = very effective)

1) The blending of theoretical and practical training *

Mark only one oval.

1 2 3 4 5 6 7 8 9 10

2) The organization of the courses *

Mark only one oval.

1 2 3 4 5 6 7 8 9 10

3) The involvement of students in hospital practical activities *

Mark only one oval.

1 2 3 4 5 6 7 8 9 10

4) The content of curriculum *

Mark only one oval.

1 2 3 4 5 6 7 8 9 10

5) The integration of pediatric surgery in the general surgical practice *

Mark only one oval.

1 2 3 4 5 6 7 8 9 10

6) The integration of childhood neuropsychiatry in the general pediatric practice *

Mark only one oval.

1 2 3 4 5 6 7 8 9 10

7) Other points of particular strength you would like to mention

What is the most valuable feature of the medical training system adopted in your Country you would not change in any way ?

How can you take advantage of the opportunities of opening up, using the experience of European countries?

Will the current strengths of the education process continue in the future?

WEAKNESSES

The factors within the SWOT analysis formula that could prevent successful results within a project are Weaknesses.

What do you consider as the most critical problems in the medical training system today adopted in your Country? (1 = not relevant 10 = very much relevant)

1) The separation of pediatric training from general medical training *

Mark only one oval.

1 2 3 4 5 6 7 8 9 10

2) The lack of proper postgraduate training in pediatric subspecialties *

Mark only one oval.

1 2 3 4 5 6 7 8 9 10

3) An excessively theoretical content of curriculum *

Mark only one oval.

1 2 3 4 5 6 7 8 9 10

4) The lack of simulation-based training *

Mark only one oval.

1 2 3 4 5 6 7 8 9 10

5) The lack of interaction with medical schools abroad *

Mark only one oval.

1 2 3 4 5 6 7 8 9 10

6) The lack of training in interaction among colleagues *

Mark only one oval.

1 2 3 4 5 6 7 8 9 10

7) The lack of training in international medical literature consultation *

Mark only one oval.

1 2 3 4 5 6 7 8 9 10

8) The lack of training in POCT (point of care testing) for neonatal care *

Mark only one oval.

1 2 3 4 5 6 7 8 9 10

9) The lack of involvement of students in pediatric research *

Mark only one oval. 1 2 3 4 5 6 7 8 9 10

10) The lack of access to evidence-based medicine *

Mark only one oval.

1 2 3 4 5 6 7 8 9 10

11) The lack of foreign languages knowledge *

Mark only one oval.

1 2 3 4 5 6 7 8 9 10

12) Something else (please specify)

Which are the most critical features of the medical training system adopted in your Country you would possibly change ?

What weaknesses in the education system can interfere with its successful implementation?

OPPORTUNITIES

Opportunities are classified as external elements that might be helpful in achieving the goals set for the project. These factors could involve arrival of new technology, fulfilling of new patients' needs, update training, etc.

What would you like the proposed project to bring to your country's medical education system (more choices possible)

Tick all that apply.

- A structural opening of minds to international cooperation
- An improvement of a program of Continuous Medical Education in the field of pediatrics
- A change in the actual curricula organization (please specify in the notes)
- Other:

Proposed changes in the curricula organisation within this project

What opportunities do you expect from a partnership with Europe?

How to make sure that the proposed changes are accepted and put into practice?

What kind of opportunities offered by this project play the main role, and which minor ones?

THREATS

Threats are external factors that could gravely affect the success of the project, such as old regulations that cannot be changed, external negative influences, lack of funding, lack of willingness to open the mind to new ideas, etc.

What risks do you see in the proposed collaboration between the universities of your Country and Europe?

What in particular would you advise to avoid?

Are there processes in the education system that can lead to a decline in the quality of training?

Any other threat you could fear for a successful implementation of the project ?

NOTES

Any further comment for a better achievement of our joint project is more than welcomed - please add here all what you like to suggest, criticise, comment