EVALUATION OF EFFECTIVENESS OF PUBLIC EXPENDITURES IN PSYCHIATRIC HEALTHCARE TREATMENTS IN GEORGIA

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Abstract
Health care system in Georgia appears to be one of the important priority of the country during last decade and varies within 9-11%. With regard to health care costs, mental health sector, share its funds within 2%. Although mental health financing and resource distribution are characterized by a growing tendency in Georgia, effective allocation of funds directed for psychiatric treatment remains underestimated. Evidence based government policies imply to offer differentiated services for people with mental health problems and are based on cost-effectiveness analysis. Contemporary studies with the cost/benefit/effectiveness analysis, confirm the effectiveness of community services intervention. In particular, under the same expenditures, community services can make far more positive results by improving the quality of life of people with mental disorders rather than ordinary hospital services.
Nowadays, costs for the inpatient services are three times higher compared to the ambulance treatments in Georgia. Taking into view the fact that the country spends 100 times less funds in financing of mental healthcare policies then developed countries and 12 times less than Eastern European countries, choosing appropriate policy which remains adequate ratio between treatment approaches on the bases of cost-effective studies arises in the political agenda.
Investing funds in community services means taking out the same amount of funds from in patient, which is already scarce and significantly lower in comparison with the similar indicators in other countries. Thus, giving preferences to inpatient or outpatient services seems to be problematic without analyzing appropriate data and comparing benefit received from funding one treatment policy to the losses of another treatment policy as a result of finance reducing..

Key words: *community; effectiveness; psychiatric services; public funds; treatment.*

JEL Classification: *I18, H51*

I. INTRODUCTION

Considering the variety of psychiatric problems, the State Policy of mental health implies differentiated service for the persons with mental problems, and is based on cost-effectiveness analysis, that depends on the expenditure, related to the interventions and the comparison of results.

On bases of the studies conducted in Georgia and by analysis of the State budget indicators, in this article we are trying to substantiate from the economic point of view the effectiveness of psychiatric community services, by its comparison with hospital services.

At the beginning of this century there was a certain polemics about how to provide the mental health services in the institutions or psychiatric hospitals within the frames of the community. Hence, there was not a common, agreed opinion which models of mental health services are acceptable in developing or developed countries (Thornicroft and Tansella, Components of a modern mental health service: a pragmatic balance of community and hospital care: overview of systematic evidence. 2004)

Nevertheless, the advantage of intervention of community services is clearly confirmed in the recent studies, where the analysis of expenditure/benefit/effectiveness has been used. In particular, within one and the same costs, the community services can bring more positive results for improvement the life quality of the persons with mental problems, than the normal hospital services (Thornicroft and Tansella, What Are the Arguments for Community-based Mental Health Care? 2003) (OECD 2014).

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II. Overview Of The Conducted Studies In Georgia

Analysis, conducted in accordance with the cost-effectiveness method almost do not exist in Georgia, few studies based on this approach investigate economic policy priorities (Erkomaishvili, Economic Policy Priorities for Development of Georgia (in Georgian) 2016), (Bergen-Cico, et al. 2017). In the field of mental health, report of the study published by the Georgian Mental Health Coalition in 2011 is the exception, where by using the cost-effectiveness approach, is presented the attempt to conduct the allocation of expenses of selected policy and the achievement of better results on bases of developing the outpatient model and piloting result (Georgian Mental Health Coalition 2011). The authors of the study assume that, by implementing the community services, it would be possible to make savings of approximately 2 million GEL during a year ($1.15 million). The low funding of the services and the wrong methodology of financing are also indicated in the next study (Aghapashvili, Geleishvili and Kuratashvili 2017)

In 2014, the Government of Georgia published the "Strategic Plan for Mental Health Development and the Action Plan 2015-2020", which is the progressive document and it represents the starting point, from which the discussion about the reform of the mental institutions can be initiated. This document acknowledges effectiveness of community-based psychiatric services in comparison with the treatments at the institutions (especially, at the big mental hospitals).

Creation of the aforementioned document was preceded by the complex study, held by the Curatio Foundation in 2014, due to which, the high hospital service costs in Georgia make a significant problem in the development of the outpatient services. The main part comes on the system of hospital service, which is reflected in the scarcity of the resources targeted for ensuring the needs defined under the outpatient program; unequal financing is observed and calculations showed insignificant costs spent per one registered beneficiary varied from one to another treatment facilities.

As a summary, Curatio indicates the main problematic context existing in the field of mental health in Georgia: scarcity of financial and human resources, which are inadequately reallocated, fragility of usage of evidences, which is reflected in the weak links between the programs services, improper models of service financing and etc. (Uchaneishvili, Gamkrelidze and Chikovani 2014)

III. Health Care Financing In Georgia And The Share Of Mental Health

Georgian Healthcare and Social Security System presents one of the priority directions in the process of planning the State budget and from 2013, with regard to the overall budget, it ranges from 30-40%. However, it would be more correct, if we talk directly about the financing allocated by the State, without the expenditure of social system. In such case the State funding on the healthcare with regard to the total budget, is within 9-11% (See Fig.1). As for the mental health sector, this field is being carried out by 12 institutions, financing of those is more or less stable during the last few years and it varies within $7-8 million. Form the Fig.2 it is clear that in terms of healthcare costs, the share of mental health expenditures in Georgia is within 2 %.

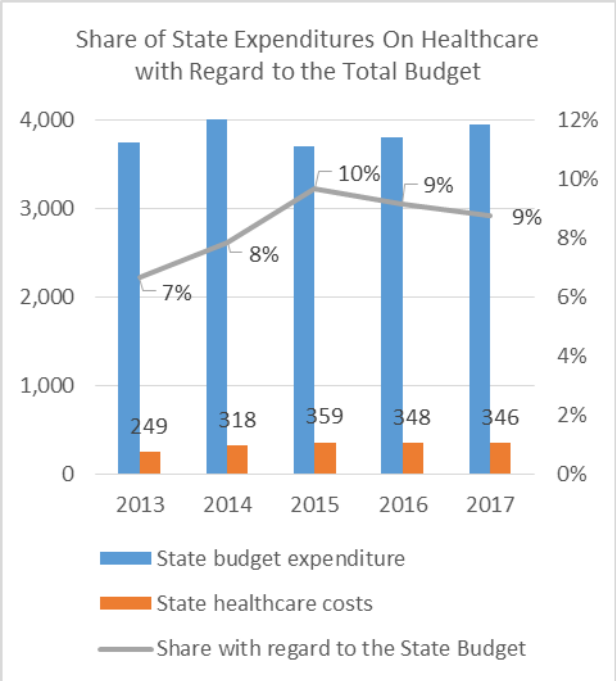

Figure 2. Share of the State expenditure on healthcare with regard to the total budget (costs in mln $). Source: National Health Reports, the Ministry of Finance of Georgia, the Ministry of Labor, Health and Social Affairs http://www.moh.gov.ge/ka/464/, the Ministry of Finance of Georgia, State Budget http://mof.ge/saxelmwifo_biujeti_wlebis_mixedvit

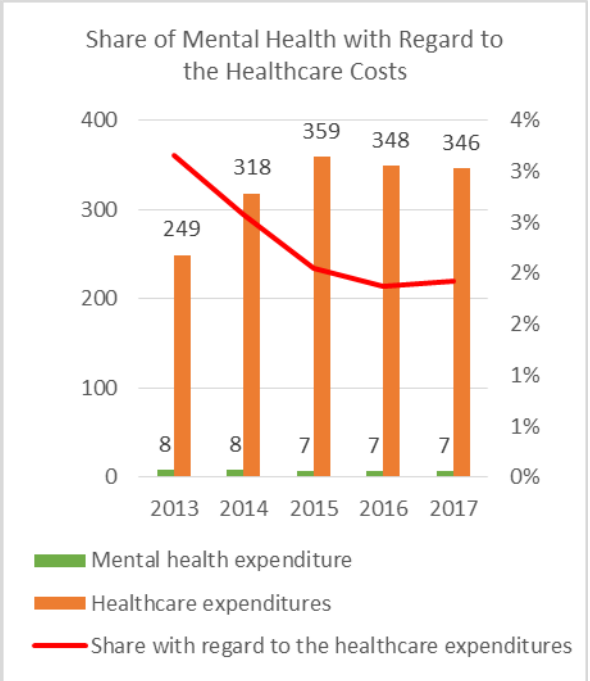

Figure 3. Share of mental health expenditures with regard to the healthcare costs (costs in mln $). Source: National Health Reports, the Ministry of Finance of Georgia, the Ministry of Labor, Health and Social Affairs http://www.moh.gov.ge/ka/464/

According to the statistical information of the year 2014, Georgia has relatively frugal data with regard to the other countries. Comparison of Georgian data even with the countries with average income, gives the following picture - the mental health expenditure per citizen in Georgia is lower than the similar indicators of other countries (11 times lower in comparison with Latvia and Poland, whereas 1,7 times lower in comparison with Moldova) and this difference becomes more visible, if we divide the aforementioned expenditure in stationary and non-stationary expenses - only $0,78 out of the whole mental service spending ($2.7) goes per person in Georgia, which is 244 times lower than the similar indicator in Great Britain, 15 times lower than in Latvia and 11 times lower than in Poland (on the other hand, Moldova and Armenia are behind - $0,76 and $0.18 respectively). See Fig.3.

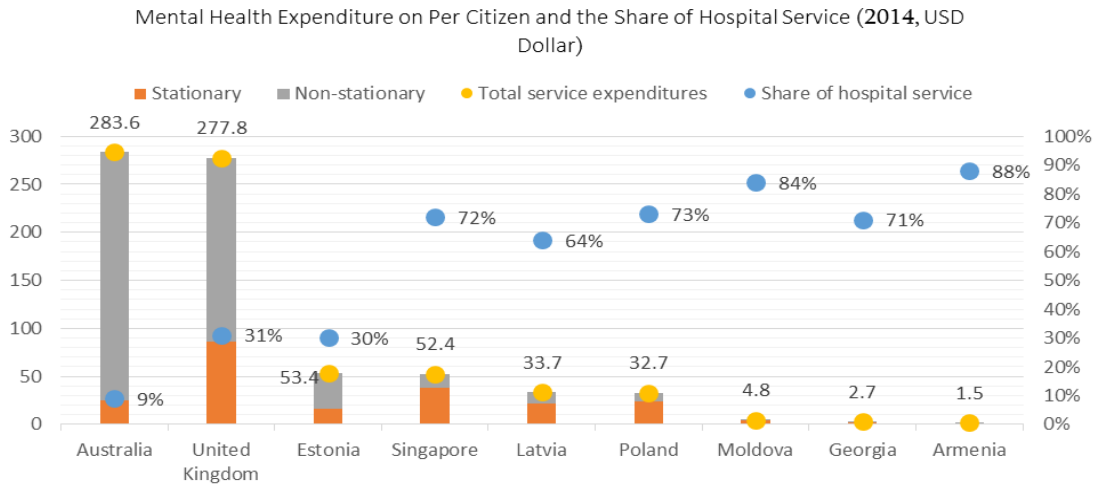

Figure 4. Mental health expenditure on per citizen, share of hospital service (2014, USD Dollar). Source: Mental health Atlas country profile 2014. http://apps.who.int/nha/database/ViewData/Indicators/en

It should also be noted that, the partial indicators of hospital service shown on the Figure 3, due to which, distribution of the costs (71%) spent for the service in Georgia, generally fits the world's tendency (blue points. With the exception of the data of Australia, Great Britain and Estonia shown in the diagram and despite the fact, that the share of the hospital service in European countries decreases, in general it is still high throughout the world (OECD 2014)) and according to the data of the mental health of the World's Healthcare Organization (among those countries, the data of which is shown in the health data), Georgia occupies the 18th place according to the share of expenses incurred on hospital services.

This statistics shows that since 2006, financing of mental health and distribution of resources, have been characterized by the growing tendency in Georgia and the country allocates three times more amount on the hospital service than to outpatient services. It's hard to talk about the selection of the proper policy, about keeping the right balance of the volume in the field of service supply and therefore, on the cost-effectiveness of implementation of the adequate approaches, while in comparison with developed countries, funding of the mentioned sector is nearly 100 times less in Georgia, whereas it is 12 times less than in Eastern European countries.

Making a choice in the direction of increasing the funding of community services, means that financing of hospital services should be reduced to the appropriate amount, which in turn, is scarce anyway and is substantially lower than the similar indicators of the other countries. Therefore, it is hard to make an unequivocal decision on financing psychiatric services in Georgia, on distributing the shares of community and outpatient expenditures in favour of one or the other part, because the results obtained by comparing the benefits received due to growth of funding in one direction, should be investigated and compared with the damages occurred due to reducing the financing in the other direction.

IV. MODELLING OF GEORGIAN MENTAL HEALTH

For modelling Georgian mental health services, we have used the secondary data from two studies, one of them was held by the Georgia's Mental Health Coalition in 2011 and the second was held by Georgian Psychological Association in 2015-16.

The effectiveness of the community services has not been confirmed according to analysis of 2011 data: in 2010 (the year, when the aforementioned study was held) 1.5 million USD was allocated by the State budget directly for the psychiatric outpatient services, while total number of unique ambulatory visitors was 13,258 persons. According to the study report, the model developed by the authors, requires 6.85 million USD for serving 14600 unique patients. If we also take into the consideration, savings due to the decreasing number of hospital visits (which according to the authors of the study is 1.15 million USD), then it turns out that the service per person by the existing service, costs 411 USD, whereas for the outpatient support services it is 665 USD (See Table 1).

Table 1. Comparison of current and hypothetic expenses.

	Current	Model
Number of patients	13258	14600
Outpatient funding ($)	1,500,000	6,900,000
Hospital service funding ($)	3,962,000	3,962,000
Saving due to the reduction of hospital applying ($)	0	-1,150000
Expenditure of one patient ($)	411	665

Source: Georgia's Mental Health Coalition 2011

Thus, the analysis of the secondary data shows that financing under the current model is much cheaper for the Government, than the design model. However, as it is mentioned in the study, the absolute majority of the benefits obtained from the design model, is non-financial natured and is in connection with the improvement of health and life quality of people with mental disorders, growth of social capital, restoration of social skills of patients, improvement of capability and employment. Aforementioned benefits are quantified neither in terms of quantity and correspondingly, nor their (non-financial results) monetary values are defined.

As for the second study (Georgian Psychological Association 2015-16), apart from the previous one, in combination with various approaches, it uses the method of studying the Quality of Life of the World's Healthcare Organization (WHOQOL). The essence of this method is to evaluate the human's life in accordance with the conditions of four different domains –"Physical", "Psychological", "Social Relationship" and "Environment" and to determine the quality of life. The study during which was examined the health condition of 73 patients before and after implementation of the service, showed that due to the intervention noticeable improvement was obtained (see Table 2). Another significant indicator of the improvement is the probability of applying in-patient services. Before the intervention, the probability of applying for the in-patient services was

100% (in other words, all patients with more or less frequency applied the hospitals) whereas, after the intervention, the probability of applying for the hospitals which amounted only 6 % (see. Table 3), could be considered as the significant result.

Table 2. Results of the study in accordance with WHOQOL

	Study I	Study II	Sig.
How would you evaluate the quality of your life?	2.836	3.217	.002
How satisfied are you with your health condition?	2.800	3.200	.013
How satisfied are you with your life?	1.800	2.500	.000
Have you got enough energy for daily activities?	2.301	2.833	.004
Have you got enough money for your needs?	1.730	2.200	.001
By what quality do you manage to relax and entertain?	1.425	1.750	.028
How satisfied are you with the ability to perform your daily activities?	2.486	2.950	.001
How satisfied are you with the capability?	2.542	2.917	.023

Source: Georgian Psychological Association

Table 3. Frequency of applying for the hospital before and after the service implementation:

Before service implementation : once /less than 2/ more than 2	15/16/42	20.5%/21.9%/57.6%
After the service implementation: not once /once/ less than 2/ more than 2	68/5/0/0	94%/6%/0%/0%

Source: Georgian Psychological Association

We tried to get one indicator from WHOQOL's four domains, in which the volume of each domain would be weighted by its share in person's QOL. This gave us the possibility to measure the effect of intervention of the community services resulted in the improvement of the total level of QOL with 15 %. The indicators of the patients health condition before and after intervention are shown in the below given Fig. 4, from which the redundancy of the positive results (improved condition) is visible.

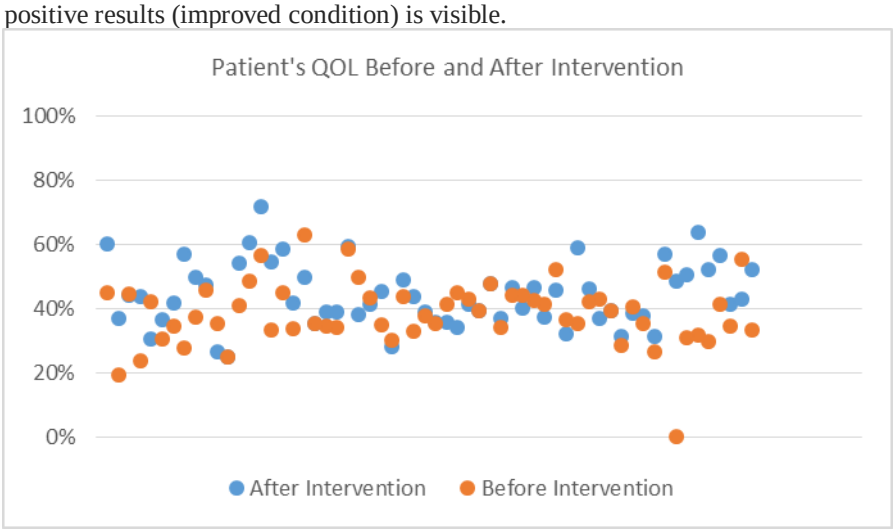

Figure 5. Patient's life quality condition before and after intervention

V. MODEL

In order to determine the effectiveness of the community intervention services, our model is based on the initial data and assumptions. In particular: 1. 73 patients were covered by the intervention, 2. as a result of the intervention the QOL was improved by 15%, 3. The number of applying for the in-patient services was reduced by 94%. Expenses necessary for the implementation of the community based treatment for 73 patients amounted - $100,000.

To create appropriate model, along with the mentioned indicators, we also calculated average number of the days of spent by chronicle patients in Georgian psychiatric facilities - 19 days and the cost of daily services - $13.2. These data were taken from the in-patient services healthcare budget of the year 2016

First of all we calculated what would cost the hospital service of the aforementioned 73 patients. Due to the results of the study, before the implementation of the intervention, all the patients used the stationary service at least once during a year. To be more specific, 15 patients from them used the hospital service, 16 –twice and 42- three times. Thus, the number of the hospital applying cases, in the absence of community services could reach up to 173, which as a result of multiplying on the average amount of the days (19) and on daily expenses gives us $43.500 (Table 4). This is the expenditure, which can be avoided in case of implementing the community service.

Table 4. Initial data

Community Service	Patient	Cost of the Service ($)	Expenditure on per person ($)
	73	100,000	1,370
Hospital service (if there was not the community service)	Applying for the hospital services	Stationary cost	Expenditure on per person
	173	43,500	251

Source: Georgian Psychological Association 2015. Budgets of psychiatric service 2016-2017

This results are unsuccessful for the policy determination and the decision making in favour of the community services, because the implementation of this type of intervention is much expensive - investment made in the community treatment exceeds the costs of the in-patient treatment by almost $57,000.

The next step is to determine whether the improvement of the QOL influences on the patient's well-being and to reflect this in financial terms. If we assume, that the patients participating in the study, who apply for the hospital service at least once a year, are presumptively unemployed persons, then we can suppose, that the improvement of their life quality by 15% and the probability of applying for the in-patient services decreases up to 94%, to some extent it may reflect on the incomes, received by them as a result of employment. According to the National Statistics Office in Georgia, in 2015 the average monthly salary was $486. Of course we cannot unambiguously think, that the person involved in the community service, who before was unemployed, after the improvement of the QOL will find the job with the average salary. Although, on the other side, it should be considered that besides being employed, due to the improvement of the life quality, the patient will have a leisure time, which he/she can spent on the house affairs. Family members, due to the time released from the care, will have opportunity to use this time in more profitably way and etc. To say in other words, the opportunity cost of the monthly average salary which can be reflected by the use the leisure time in other types of activities (which might not be directly paid), is the obtained benefit and equivalent substitution of the salary.

Such assumption gives us the opportunity to make the forecast for the several years. If we take 10 years as the period for carrying out the community intervention and suppose that nobody dies during this period, then on the 7th year of the program implementation, the benefit will exceed the cost of the intervention, whereas on the 10th year, the difference received due to the benefit obtained from the life with better quality and interventions, will be more than $345,000. However, it will be better if we take into consideration that during the intervention period there is a probability that some patients might die. During the study the number of dead people throughout the year amounted 8%. In this case, the effectiveness of the intervention after 10 years will be more than $240,000 (Fig. 5), as for the life quality of those who stayed alive, will be improved by 21 %, and after 10 years, the total index of their benefits will reach $1,000,000 (Fig. 6).

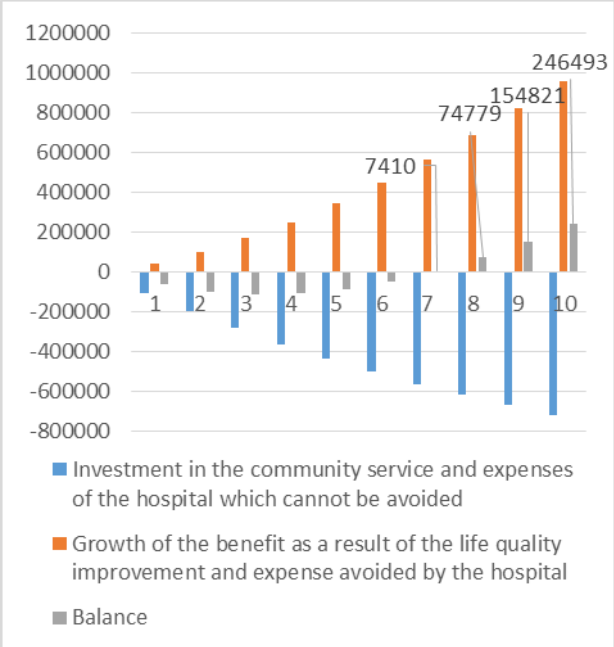

Figure 5. Model of effectiveness of the community service, comparison of expenditure and benefits during 10 years

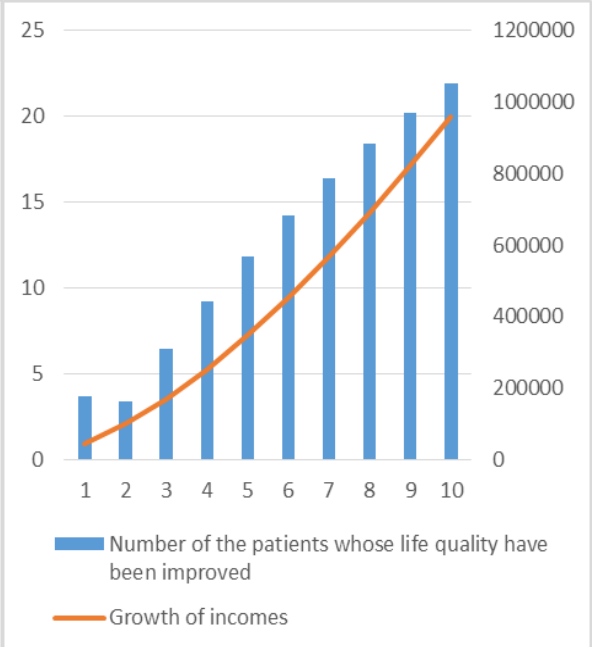

Figure 6. Model of effectiveness of the community service, growth of life quality and incomes during 10 years

VI. CONCLUSION

Thus, as our models shows, the effectiveness of the community services is clear in the dynamics of years. On the 10th year, the improved quality of life, as well as reduction of the hospital expenses and the growth of incomes caused by the opportunity costs of the patients' leisure time, give the positive effect. However, the main drawback of the aforementioned calculation is the fact that we don't know, how does the investment of the community service impact on the amount of expected years of life (as well as we don't know it in case of the stationary treatment). 6 patients out of 73 died during the study (8%). Although, even in this case it's difficult to connect these data with the expectation of the lifetime years, because the relationship of the psychiatric interventions with the death rate must be determined by well-designed studies.

Despite the aforementioned defects, we think that we tried to mark out the frame direction by the presented model, on bases of which it will be possible to carry out the study oriented to the economic effectiveness in future. In order to perfectly demonstrate a new and economically substantiated, more organized model, it is necessary to define the alternative value of the leisure time; complex evaluation of effectiveness of all possible intervention, including outpatient, shelter or psyco-consultancy services; calculation of the number of expected lifetime years.

If you are using Word, use either the Microsoft Equation Editor or the MathType add-on (http://www.mathtype.com) for equations in your paper (Insert | Object | Create New | Microsoft Equation or MathType Equation). "Float over text" should not be selected.

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