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REPORT

Cost-effectiveness of supported employment adapted for people with affective disorders

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ABSTRACT

Objective: The individual enabling and support (IES) model was effective in gaining competitive employment for people with affective disorders compared with traditional vocational rehabilitation (TVR) services in a randomized controlled trial in a Swedish setting. The object of this study is to perform a cost-effectiveness analysis of IES comparing to TVR.

Methods: We considered the costs of intervention and productivity gain due to increased competitive employment. We estimated quality of life using EuroQol 5 Dimension (EQ-5D) and Manchester Short Assessment of Quality of Life (MANSA) scale. EQ-5D was translated into quality-adjusted life-years (QALY), using the UK, Danish, and Swedish tariffs. We performed the analysis from a societal perspective with a one-year timeframe.

Results: The cost of IES was €7247 lower per person per year (2014 prices) compared to TVR. There were no significant differences in QALY improvement within or between groups. However, quality of life measured by the MANSA scale significantly improved over the study period in IES.

Limitations: Besides the small sample size, details on the intervention costs for both IES and TVR group were unavailable and had to be obtained from external sources.

Conclusions: Implementation of IES for people with affective disorders is most likely cost-saving and is potentially even dominating TVR, although a larger trial is required to establish this.

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Economic evaluation; supported employment; affective disorders; QALY; cost-effectiveness analysis

Introduction

Affective disorders such as depression and bipolar diseases come with a high-cost burden in Europe [1] as well as Sweden [2,3]. These diseases are associated with some of the longest sick leaves in Sweden [4]. In a randomized controlled trial, a new type of supported employment model, individual enabling and support model (IES) was compared with traditional vocational rehabilitation services (TVR) in a Swedish setting for patients with affective disorders with the purpose of gaining employment [5]. The IES is a [6] custom-built model for people with affective disorders which helps them to gain and keep competitive employment by strengthening individuals motivation to change, enable better cognitive function and time use strategies in addition to deliver supported employment. On the other hand, TVR services are generally, performed as a stepwise rehabilitation chain which involves the 'train-then-place' model conducted in collaboration with several welfare agencies in Sweden. After one year, the intervention was successful as the rate of competitive employment was higher in IES compared to TVR (42.2 vs. 4%, $p = .001$) [5].

This raises the question whether IES, besides being more effective, also is better use of society's available scarce resources, i.e. whether it is cost-effective. Therefore, the objective of the current study is to perform a cost-effectiveness analysis (CEA) of IES compared to TVR from a societal perspective

Materials and methods

The trial

Unemployed patients with affective disorders were recruited from four mental healthcare centers in southern Sweden in 2011–2014. After randomization, IES and TVR groups had 33 and 28 participants, respectively. The inclusion criteria were participants having depressive episodes, recurrent depression or bipolar disorder diagnosed by a psychiatrist in accordance with the International Classification of Diseases the 10th edition, having an interest in employment, not been employed in the past year, can communicate in Swedish, and receiving mental health services. Patients were excluded if they had severe drug or alcohol abuse, somatic illness, or physical disability.

In the intervention two employment specialists (ES) worked closely with patients, healthcare teams, families, employers, and the Social Insurance Agency as well as the Public Employment Service. The intervention consisted of two parts; in the enabling part the participants, with the

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tailored support of ES, worked through their inner motives, anticipated some hindrances, and potential solutions and became aware of an enabling or balanced lifestyle. These motivation, cognitive, and time use strategies are then integrated with the support provided in the second part of IES, which applies the Individual Placement and Support (IPS) model. A suitable job was identified together with the ES and the participants were provided on- and/or off-site support, which was later gradually reduced as the match increased between participants skills and abilities and the demands of the job [7].

The TVR group received conventional support which includes prevocational training in sheltered settings with a 'first getting better' perspective. This support is organized by the healthcare, municipality, Social Insurance Agency, and Public Employment Service delivered in a stepwise and regulated manner [8]. Details about the trial are published elsewhere [5].

Data collection and measures

Socio-demographic and vocational information was collected at baseline, six and 12-month follow-up. The current study uses 12-month follow-up which gives a study period of one year. Two instruments were used to measure Quality of Life (QoL); EuroQol 5 Dimension (EQ-5D) and Manchester Short Assessment of Quality of Life (MANSA).

The EQ-5D is a generic preference-based measure of QoL which comprises five attributes: mobility, self-care, usual activities, pain/discomfort, and anxiety/depression. Each attribute has three levels: no problems, some problems, and extreme problems, thus defining 243 possible health states. These health states are translated into a score using country specific tariffs varying between 0 (equivalent of dead) and 1 (perfect health). The value is considered as the quality-adjusted life-years (QALY). EQ-5D is widely used in CEA of mental health interventions [9]. The EQ-5D allows calculation of QALY which was conducted based on three alternative tariffs; UK [10], Danish [11], and Swedish [12]. The UK tariff is based on the time-trade-off approach with hypothetical questions and is the most used tariff in the scientific literature. The Danish tariff is the modified version of the UK tariff suitable for the Danish population. This tariff is of interest in the current study as the participants were from the southern part of Sweden with Denmark as a close neighbor. The Swedish tariff is recently developed and is experience based rather than hypothetical and is thereby expected to give different results compared to the UK and Danish tariffs [13].

MANSA is not a generic instrument but designed for populations with mental health problems [14]. It measures objective QoL and life satisfaction as a whole including attributes relating to job situation, financial situation, friendships, leisure activities, housing, personal safety, people living with the person, family, and health. Satisfaction is rated on a seven-point scale ranging from 1 = 'could not be worse' to 7 = 'could not be better', and an overall score of subjective quality of life is calculated ranging from 12–84. MANSA has shown good validity for people with mental illness in Swedish settings [15].

Cost-effectiveness analysis

The costs included in the analysis were intervention costs and cost reductions due to productivity gain. The cost for ES (salary) was available but the cost of traditional vocational rehabilitation services received by the TVR group as well as the extent the intervention group utilized traditional services were unavailable. We therefore used costs from a published study of a similar intervention (IPS vs. TVR) that was conducted in six different European countries [16]. Since IES is an IPS with an added first part relating to ES, the cost of IPS plus ES was considered a reasonable approximation of the intervention cost of IES. The ES cost was calculated as the monthly salary (including taxes and social security contribution) converted to a yearly cost per participant.

No quantitative information on healthcare utilization was available from the trial and potential effects on healthcare costs can therefore not be included. The positive effect of the intervention on productivity was included as a cost reduction. The productivity gain was measured as increased competitive employment in terms of hours worked and valued according to the average hourly wage (including taxes and social security contribution) for the Swedish population [17].

The costs of IPS and TVR were converted to 2014 price by using Purchasing Power Parity (€) [18] and the Swedish Consumer Price index [19].

We considered the benefits of the intervention as QoL measured by EQ-5D and MANSA. The differences in QoL between baseline and 12-month follow-up and corresponding 95% confidence intervals were estimated using non-parametric bootstrapping with 1000 repetitions. The statistical analyses were conducted in STATA' 13 (StataCorp, College Station, TX).

Sensitivity analyses

In the base case analysis, the cost for ES plus IPS is considered the intervention cost for the IES group (Table 1). However, uncertainty regarding the extent to which the cost of ES is included in the IPS estimate [16] as well as the uncertainty of the degree the cost figures are appropriate for Sweden makes it important to perform sensitivity analyses. Two different scenarios are considered:

1. The cost of ES is assumed to be included in the IPS estimate [16]: an optimistic assumption.
2. The intervention costs are assumed to be equal for both IES and TVR groups, with the exception that the IES group requires ES to conduct the intervention: a pessimistic assumption.

Results

Table 1 shows different types of costs. The productivity gain due to competitive employment for IES group was 210

working hours per person in a year compared to 3.84 in the TVR group (significantly different). One working hour was valued to €28.8 based on the average Swedish income. Therefore, the cost saving due to increased competitive employment in IES relative to TVR was on average €5948. The total cost for IES thus summed to €528 per person per year whereas the corresponding figure for TVR was €7775.

Table 2 shows no significant differences in QoL between groups (improvement in IES vs. TVR). We can therefore only compare the costs, a so-called cost-minimization analysis and the cost per person per year is €7247 lower in IES compared to TVR (Table 1). However, the MANSA instrument showed a significant improvement in QoL within the IES group (baseline vs. 12-month follow-up), while no corresponding significant improvement was observed for the TVR group.

Sensitivity analyses

Taking the optimistic assumption of the costs for ES being included in the cost of IPS, i.e. assuming that this is a part of the standard intervention costs, the results are even more beneficial. The cost of IES relative to TVR is then found to be €10,867 lower per person per year. The pessimistic assumption, that the intervention costs are equal for both groups, results in a cost saving for IES compared to TVR of €2328 per person per year.

Discussion

We performed a CEA of IES for patients with affective disorders compared to TVR from a societal perspective. We found that IES is a cost saving and potentially a dominating treatment compared to current services.

IES has been shown to be effective in increasing the rate of competitive employment compared to TVR [5]. The current study has a small, non-significant, effect of TVR on gaining competitive employment and is thereby ineffective. This is in line with a Swedish study which showed that TVR foster a service gap between treatment and employment [8]. Although IES was better compared to TVR in terms of gaining competitive employment, it did not have an effect on patients QoL compared to TVR. However, a positive effect within the IES group was found using the MANSA instrument. It is possible that a larger sample size and a longer time period would have been better in capturing QoL effects. In order to establish if an intervention is cost-effective, it first has to be effective. IES was found to be successful in gaining competitive employment but had no between-group effect on QoL. This is potentially due to the small sample size and limited timeframe. In addition, the generic EQ-5D questionnaire might not be sensitive enough to capture the differences for these particular types of patients. There is an ongoing debate that the use of EQ-5D (and QALY) may not be suitable to capture mental health changes [20,21]. The MANSA instrument is more specific to these types of patients and potentially better in capturing the benefits of the intervention [15]. We therefore interpret the within-group improvement measured by the MANSA instrument as a possible indication that there is an effect on QoL. Therefore, the study findings indicate that IES is a dominating option compared to TVR as the costs are lower and the benefits are higher.

The limitation of the study is that the trial was designed and conducted with the purpose of achieving outcomes from a psychological viewpoint and increasing labor market participation and not from an economic evaluation view point. Therefore, several issues important for health economics and CEA were not collected during the study, for example the cost of standard intervention and the changes in healthcare cost. The standard intervention cost was collected from a published source [16]. Although this is common practice in CEA, it introduces uncertainty and the results should, therefore, be interpreted with caution. As healthcare cost has previously been shown not to differ between IPS and

Table 1. Cost consequences of IES and TVR.

Type of costs[a]	IES (Euro)	TVR (Euro)	Source
Standard intervention cost	2967[b]	7886	Knapp et al. [16])
Extra IES intervention cost (employment specialist)	3620	–	From the trial
Total intervention cost	6587	7886	
Productivity gain	6059	111	From the trial and The Swedish National Mediation Office [17]
Total net cost (including productivity gain)	528	7775	

[a]Cost are adjusted as per person per year in 2014 price year.
[b]We consider the intervention costs of IES is same as IPS in addition to the extra cost of ES.

Table 2. Quality of life effects of the participants in the study[a].

Scales	IES ($n = 31$)			TVR ($n = 24$)		
	Baseline (SD)	12-month (SD)	Difference (95% CI)[b]	Baseline (SD)	12-month (SD)	Difference (95% CI)[b]
QALY (UK)	0.580 (0.31)	0.641 (0.29)	0.060 (−0.06 to 0.18)	0.542 (0.31)	0.600 (0.29)	0.059 (−0.08 to 0.20)
QALY (Danish)	0.635 (0.24)	0.680 (0.24)	0.046 (−0.05 to 0.13)	0.596 (0.24)	0.652 (0.24)	0.056 (−0.06 to 0.17)
QALY (Swedish)	0.764 (0.14)	0.797 (0.15)	0.033 (−0.03 to 0.09)	0.751 (0.14)	0.799 (0.15)	0.049 (−0.01 to 0.12)
MANSA	47.23 (7.63)	53.26 (9.91)	6.03 (2.93 to 9.16)	46.04 (10.7)	48.04 (11.82)	2.00 (−1.00 to 5.12)

[a]Analyses were based on the participants for whom 12-months follow-up data were available.
[b]Differences and the 95% CI (in the parenthesis) are estimated by bootstrapping with 1000 repetitions.
n: sample size; SD: standard deviation; QALY: quality-adjusted life-years; MANSA: Manchester Short Assessment of Quality of Life; IES: individual enabling and support; TVR: traditional vocational rehabilitation.

TVR during the trial period [16], the omission of healthcare cost is expected to have a negligible impact on the results.

To account for uncertainty, we make several assumptions which are more likely to underestimate the cost-effectiveness of IES than to overestimate it. For example, the effects on healthcare costs are assumed to be the same for two groups. Other non-vocational outcomes such as functioning, depression, and empowerment indicated a positive effect for IES comparing to TVR (unpublished results). We also include the full cost of ES divided by the small sample in the intervention group in the base case estimates. If IES is implemented on a greater scale, it is likely that each ES will have more patients than what was the case in the current study, thus reducing the average cost of the intervention per patient. Finally, given all this and applying the most pessimistic assumption in the sensitivity analysis, IES is still less costly than TVR from the societal perspective, without being any worse in terms of QoL. It is therefore reasonable to conclude that IES is cost saving compared to TVR.

Conclusions

Our analysis shows that IES is cost saving compared to TVR from a societal perspective. The costs are substantially lower while the benefits in terms of QoL are indistinguishable between the two groups. Based on the limited sample and the 12-month follow-up, implementation of IES for people with affective disorders is advisable from a cost-effectiveness point of view if the purpose is to increase competitive employment compared to TVR. However, more research on IES in general and on cost-effectiveness in particular is recommended before wide implementation, with a larger sample size and longer timeframe compared to the current trial.

Disclosure statement

No potential conflict of interest was reported by the authors.

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