TECHNICAL COMMENTARY

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SCHIZOPHRENIA LIBRARY

Cost of psychosocial treatments

Introduction

The burden of schizophrenia includes direct costs, indirect costs, and intangible costs. Direct costs are estimated by the amount of services used and the price of treatment. Indirect costs are estimated by the averaged reduced future earnings of both patients and caregivers. Intangible costs are those that may be associated with the illness, such as trauma and depression. This topic presents the evidence on the direct costs of psychosocial treatments. For information on the global costs of schizophrenia, please see the Population Burden and Pharmaceutical Treatment Cost topics.

Method

We have included only systematic reviews (systematic literature search, detailed methodology with inclusion/exclusion criteria) published in full text, in English, from the year 2000 that report results separately for people with a diagnosis of schizophrenia, schizoaffective disorder, schizophreniform disorder or first episode schizophrenia. Reviews were identified by searching the databases MEDLINE, EMBASE, CINAHL, Current Contents, PsycINFO and the Cochrane library. Hand searching reference lists of identified reviews was also conducted. When multiple copies of reviews were found, only the most recent version was included. Reviews with pooled data is prioritised for inclusion.

Review reporting assessment was guided by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) checklist that describes a preferred way to present a meta-analysis[1]. Reviews with less than 50% of items checked have been excluded from the library. The PRISMA flow diagram is a suggested way of providing information about studies included and excluded with reasons for exclusion. Where no flow diagram has been presented by individual reviews, but identified studies have been described in the text, reviews have been checked for this item. Note that early reviews may have been guided by less stringent reporting checklists than the PRISMA, and that some reviews may have been limited by journal guidelines.

Evidence was graded using the Grading of Recommendations Assessment, Development and Evaluation (GRADE) Working Group approach where high quality evidence such as that gained from randomised controlled trials (RCTs) may be downgraded to moderate or low if review and study quality is limited, if there is inconsistency in results, indirect comparisons, imprecise or sparse data and high probability of reporting bias. It may also be downgraded if risks associated with the intervention or other matter under review are high. Conversely, low quality evidence such as that gained from observational studies may be upgraded if effect sizes are large, there is a dose dependent response or if results are reasonably consistent, precise and direct with low associated risks (see end of table for an explanation of these terms)[2]. The resulting table represents an objective summary of the available evidence, although the conclusions are solely the opinion of staff of NeuRA (Neuroscience Research Australia).

Results

We found two systematic review that met our inclusion criteria[3, 4].

- Low quality evidence is unclear as to the costs of psychosocial treatment for early intervention or early-onset schizophrenia.

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Amos, A

Assessing the cost of early intervention in psychosis: A systematic review

Australian and New Zealand Journal of Psychiatry 2012; 46: 719

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Comparison	**Resource utilisation and costs of early intervention programs vs. treatment as usual.**
Summary of evidence	**Low quality evidence (mostly small samples, direct, unable to assess consistency or precision) is unable to determine the cost-effectiveness of early intervention programs.**

Economic and clinical outcomes

1 RCT (N = 144) assessed early intervention vs. treatment as usual over 18 months and found no differences in inpatient or outpatient costs, vocational recovery or hospitalisation rates.

1 RCT (N = 41) compared prophylactic treatment in people with at-risk mental states (ARMS) with treatment as usual and found no differences in total costs, but greater outpatient costs during prophylactic treatment, and lower outpatient costs after prophylactic treatment. There were no differences in clinical ratings.

1 case-control study (N = 65) assessed outcomes before and after the introduction of an early intervention program, comparing it to historical/regional treatment-as-usual controls. The study reported emergency department annual costs of AUD$3445 with early intervention, and AUD$9503 with historical controls, which was significantly different ($p < 0.01$). This study also reports better clinical ratings with the early intervention program.

1 case review (N = 305) compared outcomes of first-episode psychosis patients before and after the introduction of an early intervention program over a 3 year period. Total inpatient costs reduced significantly from CAD$4,323,590 to CAD$3,415,174 ($p < 0.01$), however there were no changes in bed numbers or occupancy. Early intervention also reduced prehospitalisation injury, but there were no differences in the number of suicide attempts, aggression, or legal involvement.

1 case-control study (N = 127) compared early intervention with historical/regional treatment-as-usual controls over a 3 year period. The study reported significantly reduced inpatient costs with early intervention compared to treatment as usual at 1 year (SEK$9,895 vs. SEK$23,090, $p < 0.05$), however outpatient early intervention costs were higher at 1 year with early intervention (SEK $2,133 vs. SEK$474, $p < 0.05$). There were no differences in costs at years 2 or 3, nor where there differences on any clinical measure at any time point.

1 case-control study (N = 130) compared early intervention with an historical control group over a 2 year period. There were no differences in total costs or hospital costs, however outpatient costs

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were higher with early intervention than with treatment as usual (HKD$12,792 vs. HKD$10,588, $p < 0.05$). Medication costs were also higher with early intervention (HKD$7,542 vs. HKD$231, $p < 0.01$). There were no differences in PANSS positive or general clinical ratings, but PANSS negative rating was better with early intervention. 1 case-control study (N = 46) compared early intervention with treatment as usual over a 5 year period and reported no differences in inpatient or residential costs, but outpatient costs were higher with early intervention (EURO€30,701 vs. EURO€25,292, no *p* value reported). There were no differences in clinical ratings at 5 years. 2 modelling studies reported that prophylactic intervention reduces conversion to psychosis and preserves function such as ability to work, and that inpatient costs are greater with treatment as usual but outpatient costs are greater with early intervention.

Consistency in results‡	Unable to assess, no measure of consistency is reported.
Precision in results§	Unable to assess, no measure of precision is reported.
Directness of results‖	Direct

Romeo R, Byford S, Knapp M

Annotation: Economic evaluations of child and adolescent mental health interventions: A systematic review

Journal of Child Psychology and Psychiatry and Allied Disciplines 2005; 46(9): 919-930

View review abstract online

Comparison	**Estimated cost of psychosocial treatments for early-onset schizophrenia.**
Summary of evidence	**Low quality evidence (unable to assess consistency or precision) is unclear as to the costs of psychosocial treatments for early-onset schizophrenia.**
Economic outcomes	
One study (N not reported) found psychoeducational therapy was more cost-effective than standard care, in terms of both treatment and social welfare service costs.	
Consistency in results	Unable to assess, no measure of consistency is reported.

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Precision in results	Unable to assess, no measure of precision is reported.
Directness of results	Direct

Explanation of acronyms

AUD = Australian dollar, CAD = Canadian dollar, HKD = Hong Kong dollar, N = number of participants, *p* = statistical probability of obtaining that result ($p < 0.05$ generally regarded as significant), SEK = Swedish Krona

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Explanation of technical terms

* Bias has the potential to affect reviews of both RCT and observational studies. Forms of bias include; reporting bias – selective reporting of results; publication bias - trials that are not formally published tend to show less effect than published trials, further if there are statistically significant differences between groups in a trial, these trial results tend to get published before those of trials without significant differences; language bias – only including English language reports; funding bias - source of funding for the primary research with selective reporting of results within primary studies; outcome variable selection bias; database bias - including reports from some databases and not others; citation bias - preferential citation of authors. Trials can also be subject to bias when evaluators are not blind to treatment condition and selection bias of participants if trial samples are small[5].

† Different effect measures are reported by different reviews.

Prevalence refers to how many existing cases there are at a particular point in time. Incidence refers to how many new cases there are per population in a specified time period. Incidence is usually reported as the number of new cases per 100,000 people per year. Alternatively some studies present the number of new cases that have accumulated over several years against a person-years denominator. This denominator is the sum of individual units of time that the persons in the population are at risk of becoming a case. It takes into account the size of the underlying population sample and its age structure over the duration of observation.

Reliability and validity refers to how accurate the instrument is. Sensitivity is the proportion of actual positives that are correctly identified (100% sensitivity = correct identification of all actual positives) and specificity is the proportion of negatives that are correctly identified (100% specificity = not identifying anyone as positive if they are truly not).

Weighted mean difference scores refer to mean differences between treatment and comparison groups after treatment (or occasionally pre to post treatment) and in a randomised trial there is an assumption that both groups are comparable on this measure prior to treatment. Standardised mean differences are divided by the pooled standard deviation (or the standard deviation of one group when groups are homogenous) that allows results from different scales to be combined and compared. Each study's mean difference is then given a weighting depending on the size of the sample and the variability in the data. 0.2 represents a small effect, 0.5 a medium effect, and 0.8 and over represents a large effect[5].

Odds ratio (OR) or relative risk (RR) refers to the probability of a reduction (< 1) or an increase (> 1) in a particular outcome in a treatment group, or a group exposed to a risk factor, relative to the comparison group. For example, a RR of 0.75 translates to a reduction in risk of an outcome of 25% relative to those not receiving the treatment or not exposed to the risk factor. Conversely, a RR of 1.25 translates to an increased risk of 25% relative to those not receiving treatment or not having been exposed to a risk factor. A RR or OR of 1.00 means there is no difference between groups. A medium effect is considered if RR > 2 or < 0.5 and a large effect if RR > 5 or < 0.2[6]. lnOR stands for logarithmic OR where a lnOR of 0 shows no difference between groups. Hazard ratios

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measure the effect of an explanatory variable on the hazard or risk of an event.

Correlation coefficients (eg, r) indicate the strength of association or relationship between variables. They can provide an indirect indication of prediction, but do not confirm causality due to possible and often unforseen confounding variables. An r of 0.10 represents a weak association, 0.25 a medium association and 0.40 and over represents a strong association. Unstandardised (*b*) regression coefficients indicate the average change in the dependent variable associated with a 1 unit change in the independent variable, statistically controlling for the other independent variables. Standardised regression coefficients represent the change being in units of standard deviations to allow comparison across different scales.

‡ Inconsistency refers to differing estimates of effect across studies (i.e. heterogeneity or variability in results) that is not explained by subgroup analyses and therefore reduces confidence in the effect estimate. I^2 is the percentage of the variability in effect estimates that is due to heterogeneity rather than sampling error (chance) - 0% to 40%: heterogeneity might not be important, 30% to 60%: may represent moderate heterogeneity, 50% to 90%: may represent considerable heterogeneity and over this is considerable heterogeneity. I^2 can be calculated from Q (chi-square) for the test of heterogeneity with the following formula[5];

$$I^2 = \left(\frac{Q - df}{Q}\right) \times 100\%$$

§ Imprecision refers to wide confidence intervals indicating a lack of confidence in the effect estimate. Based on GRADE recommendations, a result for continuous data (standardised mean differences, not weighted mean differences) is considered imprecise if the upper or lower confidence limit crosses an effect size of 0.5 in either direction, and for binary and correlation data, an effect size of 0.25. GRADE also recommends downgrading the evidence when sample size is smaller than 300 (for binary data) and 400 (for continuous data), although for some topics, these criteria should be relaxed[7].

‖ Indirectness of comparison occurs when a comparison of intervention A versus B is not available but A was compared with C and B was compared with C that allows indirect comparisons of the magnitude of effect of A versus B. Indirectness of population, comparator and/or outcome can also occur when the available evidence regarding a particular population, intervention, comparator, or outcome is not available and is therefore inferred from available evidence. These inferred treatment effect sizes are of lower quality than those gained from head-to-head comparisons of A and B.

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