

## **PREVENTION OF MENTAL HEALTH PROBLEMS BY YOUTH HEALTH CARE IN THE NETHERLANDS: an ecologic case-referent study**

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**Background** - To examine the effect of (regular) well-care visits and freely accessible consultation hours on secondary schools on prevalence of adolescent mental health problems and present state of mind.

**Methods** - ecologic case-referent study design with data from the High-School Students Study, and the youth health care departments in the Netherlands.

The study included 4635 students aged 12-18 year of which 3673 had answered all 33 questions on a mental health questionnaire and 4140 had answered the two questions about present state of mind.

**Results** - The Odds Ratio for mental health problems as measured by the questionnaire was in the case of adolescents having access to open consultation hours 0.90 (95% confidence interval 0.74-1.09), when they had experienced more well-care visits 1.02 (95% confidence interval 0.84 - 1.24) and when the well-care visit had taken place more recently 0.96 (95% confidence interval 0.87-1.05). The Odds Ratios for the influence on present state of mind were 1.15 (95% confidence interval 0.93-1.42) for open consultation hours, 0.92 (95% confidence interval 0.74-1.14) for the number of well-care visits and 1.00 (95% confidence interval 0.90-1.11) for more recent well-care visits. In all cases an Odds Ratio > 1.00 signifies an adverse effect.

**Conclusion** - This study does not support the hypothesis that on a population level, preventive activities of youth health care departments such as (more) frequent well-care visits or institution of open consultation hours on secondary schools, have a beneficial effect on the prevalence of mental health problems.

## BACKGROUND

With prevalence figures of serious mental health problems in general population samples of children and adolescents varying between 17% and 22%, there can be no doubt that prevention of these problems is of great importance. This is further emphasised by the fact that only a fraction of adolescents with severe mental health problems actually receives therapy.[1-5] Partly, this is because adolescents primarily turn to family members, friends, trusted adults, and school personnel for help in these matters. Only if these resources fail, do they consult (school-based) health services or clinicians.[6-10] Studies of the utilisation of these facilities in the USA show that nevertheless 25% of the adolescents presents with problems related to mental health, so a much higher prevalence is not unlikely.[2,11,12] Prevention and subsequent treatment are further hindered by the fact that recognition of mental health problems is hardly straightforward. In a survey of the prevalence of psychiatric disorders in Dutch adolescents, 21% were diagnosed with a disorder as defined by the DSM-III-R,[13] but more than two thirds of these adolescents functioned quite well.[14] Also, adolescents often present with vague somatic complaints when actually seeking help on psychological or psychiatric problems, making recognition even harder.[4,15]

The importance of early effective preventive or therapeutic interventions is emphasised by the results of an eight-year longitudinal study of children and adolescents in The Netherlands. The study showed, that childhood problems tend to persist into young adulthood, even those that are usually thought to be age dependent, like attention disorders and hyperactivity.[1,14,16] Other longitudinal studies show comparable results.[17,18]

As the cause of mental health disorders can often be found in early childhood development,[19] educational programs and other efforts to prevent development of mental health problems are introduced on an increasingly wider scale.[20-24] To the same purpose, several child and adolescent health organisations recommend frequent well-care visits, at least every two to three years (Guidelines for Adolescent Preventive Services [GAPS]: annual preventive visit for adolescents between 11 and 21 years of age; US Preventive Services Task Force [USPSTF]: preventive visits every two or three years for adolescents up to age 21; American Academy of Pediatrics: well-care visit every two years for adolescents up to age twenty). In this way (both physical and) mental health problems should be detected early enough for preventive actions to be effective. However, the main focus of these visits is on prevention of other than mental health problems, and thus little time is spent on mental health preventive actions.[11] Also, the lack of proficiency of the health care professional [2,25] and the reluctance of adolescents to communicate mental health problems to (school) physicians,[6-10] will lessen the effect. Apart from that, it has been estimated that even in the most cost-efficient model a reduction of at least 15% of adolescent morbidity is necessary to outweigh the economic investment.[26] Furthermore, studies on the impact of these programs are relatively sparse and hampered by unclear and frequently changing definitions.[27,28]

## PREVENTION OF MENTAL HEALTH PROBLEMS BY YOUTH HEALTH CARE DEPARTMENTS IN THE NETHERLANDS

Youth health care departments in the Netherlands are part of the Regional Health Services, often working for more than one municipality. They offer programs to all primary and secondary schools in the region and the take-up by the schools is almost 100%. Since the first school-based youth health care activities were initiated in The Netherlands – more than a century ago - the youth health care has grown into a nation-wide, labour-

intensive service, employing hundreds of physicians, nurses and medical assistants. By the time they leave school, every child in The Netherlands will have been exposed to a wide variety of preventive health - and health promotion activities, administered by many different youth health care workers. The services are most often rendered on the school premises and may include health promotion programmes, screening for specific physical abnormalities, well-care visits and (freely accessible) consultation hours. For the most part these activities are carried out by youth health care physicians, less often by nurses, and medical assistants. Between youth health care departments, there is a large variety in the total number, content and intensity of programmes, screenings, and well-care visits as well as the availability of consultation hours on schools. This variety is largely due to different views and priorities in the various health care regions concerning the content of preventive services for children and adolescents.

Well-care visits are orientated towards primary or secondary prevention of physical, behavioural and psychological problems and are offered to all children and adolescents at a certain age or in specific grades. Especially in primary schools, parents are encouraged to accompany their children. In primary schools, the take-up by pupils is generally more than 90%, in schools for secondary education somewhat lower, depending on the level of education. The visits last 15 – 20 minutes a student.

The personal contact during well-care visits provides the possibility of giving individualised advice to parents, children and/or adolescents. Because of this personal approach, advice given during visits is supposed to be more effective than the often-unsolicited advice given in, for instance, education programs or health promotion campaigns.

Consultation hours are accessible to pupils, parents and teachers, normally without prior appointment. In most cases, open consultation hours were implemented, because in the early eighties regular well-care visits for the older adolescents (age 16/17 years) were discontinued, mostly on budgetary grounds. Consultation hours are intended to give easy access to the Health Care professionals – in most cases physicians, sometimes nurses - for questions on, and in aid of prevention of, physical and mental health problems. Because in freely accessible consultation hours, advice is often actively sought, the impact of individual counselling during these contacts is supposed to be greater than in the more non-specific setting of well-care visits.

Special training is not obligatory for workers that conduct these consultation hours, as additional schooling on top of the basic medical and public health training mainly depends on personal interests.

What sets youth health care practice apart from primary and secondary health care, is the fact, that youth health care workers, be it physicians or nurses, are not permitted to treat children under their care. If therapy of any sort is deemed necessary, the child must be referred to a general practitioner or other relevant therapist. However, in some cases a restricted number of short counselling sessions may precede (or even replace) referral to, for instance, institutes for mental welfare. This practice seems to be unique when compared to school health services in most other countries.

In the past years, not only the frequency of contacts has changed but also the content. Especially the last two decades have seen profound changes in the way school-based youth health care services are conducted, in many instances necessitated by budgetary cutbacks. Furthermore, a shift of attention from physical to mental health problems required a fundamental change in the content of prevention activities and in the professional attitude of youth health care workers.

Examples, however, of changes brought about on scientific grounds or due to outcomes of evaluative health

services research, are rare. This is especially true for the total number of well-care visits, the content of these visits, the institution of freely accessible consultation hours on schools for primary or secondary education, health promotion activities and the like.

Youth health care still relies heavily on personal contact, physical examination and individualised advice for the prevention of physical, behavioural and psychological problems in children and adolescents. However, the effectiveness of this approach is not substantiated by any evaluative research.

Part of the rationale for implementing school-based activities is, that by frequent individual contacts, be it during screenings, well-care visits or consultation hours, (conditions inducing) mental health problems will be detected earlier so that prompt and expert help can be initiated at a stage where prevention is still possible. Since childhood and adolescent mental health problems generally tend to persist, [16-18,25] the more individual contacts, the more chance of early detection and thus early treatment. But again, no studies are available to support this assertion.

Not only in Anglo-Saxon countries, like the USA, UK and Australia but also in Germany and Switzerland, similar questions are raised regarding the effectiveness of school health services, the value of (frequent) well-care visits, and in general the contribution of these activities to general health and healthy behaviour of children and adolescents.[29,30] Also the lack of scientific underpinnings for these activities and the urgent need for evaluative studies is emphasised and alternatives are discussed.[31-35]

The purpose of this study is to determine whether a greater number of well-care visits, a shorter period since the last visit, and/or the availability of freely accessible ('open') consultation hours on schools for secondary education result in better scores on mental health scales and a better overall present state of mind.

## **POPULATION AND METHODS**

In 1992, the Netherlands Institute for Budget Information conducted the High-School Students Study. More than 11,000 students were asked to complete a questionnaire, which included 40 questions concerning mental health status and two questions about present state of mind (see Appendix for an overview of these questions).[36]

The questionnaires were completed in the classroom in 1992, at the beginning of the new school year, and had a response of more than 95%. A random selection of approximately 50% was made available for this analysis.

Based on postal code of the school, it was determined to what youth health care department the students had to be allocated.

Based on a report of the Dutch Institute for Research on Government Spending on regional differences in prevalence of psychosocial problems among 0-18 year olds,[37] from the questionnaire the following co-variables were selected for inclusion in the regression models as independent variables: ethnic origin, type of education, family situation, parental occupational status and degree of urbanisation of the place of residence of the subject.

The total number of well-care visits of youth health care physicians or nurses, the grades in which they were planned and the availability of open consultation hours on schools for secondary education in the period of 1987-1992 were determined on the basis of annual reports of all Dutch youth health care departments, if necessary supplemented by personal inquiries. Only one youth health care department refused to participate.

For each student in a certain grade at the time of the survey, the number of well-care visits he or she was exposed to, the number of years since the last visit, and the availability of open consultation hours was assessed. Table 1 gives an overview of the distribution of the study population according to these determinants.

Of the two possible answers on the 40 questions on mental health (agree/disagree), answers signifying a negative opinion were rated one point, positive answers were rated as zero. After reliability testing seven questions were not included in the mental health scale, leaving 33 questions (Cronbach's Alpha = 0.85; see Appendix).

To gain contrast on the outcome variable, only students scoring within the lowest quartile of the sumscore on the mental health scale (i.e. having a better mental health; referents) and those that scored within the highest quartile (i.e. having a worse mental health; cases) were included in the analysis.

The same procedure was followed with the variable 'present state of mind': students who reported to be in a (very) good mood and doing (very) well were considered referents and students that answered negatively on both questions were considered cases.

Table 2 gives an overview of the distribution of the number of cases and referents for the two outcome variables according to number of well-care visits and availability of open consultation hours.

For each outcome variable, two logistic regression models were fitted to estimate the effect of having access to open consultation hours (model one), and of the total number of well-care visits and the time elapsed since the last of these visits (model two) conditional on the co-variables and possible (age, gender, ethnicity, grade, type of education, family situation, parental occupational status, degree of urbanisation). The following interaction terms were also included: parental occupational status and ethnicity, type of education and ethnicity, and type of education and grade. Variables were added and retained in the model only when inclusion resulted in a substantial change in the Odds Ratio of the determinant under consideration. When an interaction term was included, in the final model the constituent variables were also included.

## RESULTS

In four different logistic regression procedures the influence of having access to open consultation hours and the influence of the total number of well-care visits and the number of years since the last of these visits on 'mental health' and 'present state of mind' was estimated.

Table 3 gives an overview of the Odds Ratios of the dependent variables with their 95% confidence intervals before and after introduction of the confounding variables. Only the variables 'grade' and 'type of education' appeared to cause confounding, as inclusion of these factors resulted in a substantial change in the regression coefficients of the determinants under consideration. All other variables effected a change of 5% or less. An Odds Ratios larger than 1.00 indicates an adverse effect of the determinant under consideration. All but one of the Odds Ratios failed to show a significant effect of the determinants on the outcome variables (table 3). The only exception appeared to be a positive influence of open consultation hours on adverse mental health, but after correction for confounding this effect became smaller and not significant. Further analysis showed, that only students of lower vocational education schools could possibly benefit from open consultation hours. Of those that had access to open consultation hours 60% scored in the top 25% of the mental health scale (cases) against 74% of those without. The Odds Ratio for consultation hours, when including the variable in

which mental health of students of lower vocational education schools was compared to that of students of all other types of schools, was 0.81 (95% C.I.=0.63–1.04).

In a further exploration of possible effects of the youth health care activities on mental health, Spearman correlations were calculated between the three youth health care determinants and the 33 items of the mental health scale. In all cases, especially items denoting confidence and self-reliance seem to be adversely affected by increased efforts on the part of the youth health care departments. After factor analysis with varimax rotation two subscales were identified in which most of these items were represented (11-item scale 'fear and insecurity' Cronbach's Alpha = 0.75, and eight-item scale 'confidence and self-image', Cronbach's Alpha = 0.71; see Appendix). Again, none of the three youth health care determinants had a significant influence on the two subscales. Furthermore, only the influence of open consultation hours tended to be favourable.

## **DISCUSSION**

This study does not support the hypothesis that (more) frequent well-care visits or the institution of open consultation hours on secondary schools, have a beneficial effect on the prevalence of mental health problems.

Before accepting these findings however, several methodological issues need to be addressed.

With respect to misclassification, given the comprehensive method of data gathering, the information concerning the working methods of the youth health care-departments is of high quality. As stated in the introduction, the content of well-care visits, especially in regard to diagnosis of and advice concerning mental health problems, can vary per department and youth health care worker. Studies show, however, that in general the considerable differences are due more to inter-physician variations than differences between the various centres.[38]

Internal migration has probably led to some misclassification on the determinants, as it was not possible to ascertain which students had moved to other youth health care regions and therefore could be subject to other youth health care working methods. Therefore, some dilution of the effect due to this misclassification might have occurred.

Generally, attendance to well-care visits is more than 85% and often reaches 95% in schools for higher general secondary or pre-university education. Failing to appear due to illness will generally lead to a call up later that year or the following year, so the total number of visits will eventually be the same. Nevertheless, students from a lower social-economic background and of those more often the girls, fail to appear relatively more often. The same can be said when non-attendance is caused by truancy, although in that case it more often concerns boys.

## **CONCLUSIONS**

at a population level a beneficial effect of frequent well-care visits and open consultation hours on mental health and state of mind of adolescents cannot be demonstrated. Only students of schools for lower vocational education can possibly benefit from open consultation hours, at least as far as their mental health is concerned.

These results are surprising as the expectation with respect to the effectiveness of these programs is high, and nowadays prevention of mental health problems is considered to be one of the main targets for youth health

care activities in this age group. However, similar studies of the long-term effects of youth health care activities for schoolchildren in The Netherlands yield analogous results. None of these studies revealed a favourable influence of these activities on a variety of health outcomes.[39-42] In several instances – notably prevention of suicide and several lifestyle variables – even a significantly negative influence could be demonstrated.[40,41] Perhaps teachers and parents (and even pupils) are less attentive to ‘signals of distress’ of fellow students, because, in their opinion, those problems are adequately dealt with by the (preventive) activities of youth health care workers. Thus, one of the potentially most important factors when it comes to influencing (mental) health – the direct environment of child and adolescent – is made ineffective. The sparse moments of contact with youth health care workers cannot hope to make up for this attention deficit, rendering their activities ineffective at best.

In general it can be concluded that further studies are urgently needed to inquire into the reasons behind this lack of demonstrable effects. In the mean time, other methods for prevention of mental health problems among adolescents, within or outside the context of youth health care, should be developed. Leaving the activities unchanged would represent an unreasonable and disproportionate burden to the already limited resources of Preventive Health Care. In addition, this study stresses the importance of proper evaluation of any program directed to prevent mental health problems among adolescents.

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**APPENDIX**

Questions on mental health (possible answers: I agree, I disagree). Questions marked with '\*' are not included in the mental health scale. Questions marked with <sup>11</sup> are included in the 11-item subscale 'fear and insecurity', and questions marked with <sup>12</sup> are included in the 8-item subscale 'confidence and self-image'.

- |                 |   |                 |  |
|-----------------|---|-----------------|--|
| 1*              | I like going to school.                                       | 21              | I cannot get along with my mother very well.   |
| 2*              | I like being at school.                                       | 22*             | When I go out I usually carry a weapon.  |
| 3               | I don't like being at home.                                   | 23 <sup>2</sup> | I am not satisfied with my looks.  |
| 4               | I often feel lonely.  | 24 <sup>2</sup> | I think others find me unattractive.   |
| 5*              | I think it is very exciting to do dangerous things.           | 25              | I often get bored when I'm not at school.  |
| 6               | I often feel gloomy.  | 26 <sup>1</sup> | I wish I had more hobbies.   |
| 7 <sup>2</sup>  | In general I am quite satisfied with myself.                  | 27              | I feel I have no control over my own life.   |
| 8 <sup>2</sup>  | I don't feel that I can be proud of myself.                   | 28 <sup>1</sup> | I feel very uncertain when I have to make a decision.                                      |
| 9 <sup>2</sup>  | In many things I am as good as most others.                   | 29 <sup>1</sup> | I am often afraid to fail.   |
| 10 <sup>2</sup> | Sometimes I think, I will never be able to do anything right. | 30 <sup>1</sup> | I often feel afraid to be on the street.   |
| 11 <sup>2</sup> | I often feel that everything I do is wrong.                   | 31 <sup>1</sup> | I quickly get anxious when things don't turn out the way I expect them to.                 |
| 12*             | It is a good thing to go to school.                           | 32 <sup>1</sup> | In company I often feel insecure.  |
| 13 <sup>2</sup> | I generally feel good about myself.                           | 33 <sup>1</sup> | I quickly feel let down.   |
| 14              | People like me have little opportunity to succeed in life.    | 34 <sup>1</sup> | Sometimes I get very afraid without reason.  |
| 15              | I cannot get along with my father very well                   | 35 <sup>1</sup> | I often have nightmares.   |
| 16              | I really feel the lack of a good friend.                      | 36              | I can get so angry that I lose all control.  |
| 17              | Often I have the feeling nobody cares about me.               | 37 <sup>1</sup> | I often find it hard to express my feelings.   |
| 18              | In general I get along very well with other children my age.  | 38*             | I tend to check the things I do over and over again.                                       |
| 19              | I often am bullied by children my age.                        | 39*             | Often I am more meticulous than is strictly necessary.                                     |
| 20              | I easily make friends.  | 40 <sup>1</sup> | When I am tense I tend to develop physical complaints (headache, stomach ache, and nausea) |

Questions on present state of mind:

- I All in all, how would you like to describe your present mood? (very good, good, not too good, rather depressed, very much depressed)
- II All things considered, how are you doing now? (very good, good, reasonably well, fair, bad, very bad)

**Table 1.** Total number of students per number of well-care visits and availability of open consultation hours.

	consultation hours	no consultation hours	undetermined	TOTAL
no visits	235	45	0	280
1 visit	696	993	170	1,859
2 visits	1,124	785	415	2,324
3 visits	31	98	0	129
<b>TOTAL</b>	2,086	1,921	585	4,592

**Table 2.** Number of students (with row percentages) per number of well-care visits, and availability of open consultation hours for each of the outcome variables.

	Mental health sumscore		Present state of mind	
	> 75% (cases)	< 25% (referents)	(very) bad (cases)	(very) good (referents)
<b>Number of well-care visits</b>				
no visits	58 (48%)	64	29 (14%)	181
1 visit	445 (53%)	403	193 (13%)	1.254
2 visits	514 (52%)	480	254 (14%)	1.559
3 visits	30 (56%)	24	9 ( 9%)	93
<b>Availability of consultation hours</b>				
no consultation hour	451 (54%)	391	194 (13%)	1.295
consultation hour	456 (48%)	487	228 (14%)	1.429

**Table 3.** Odds Ratios (OR) and their 95% confidence intervals for the influence of having access to open consultation hours, the total number of well-care visits and the number of years since the last well-care visit on mental health and present state of mind, before and after introduction of confounding variables (O.R. > 1 signifies an adverse effect).

		adverse mental health	adverse state of mind
open consultation hours	crude OR	0.81 (0.67-0.98)	1.07 (0.87-1.31)
	adjusted OR	0.90 (0.74-1.09) <sup>a</sup>	1.15 (0.93-1.42) <sup>a</sup>
number of well-care visits	crude OR	0.97 (0.80-1.17)	0.88 (0.71-1.09)
	adjusted OR	1.02 (0.84-1.24) <sup>b</sup>	0.92 (0.74-1.14) <sup>b</sup>
number of years elapsed	crude OR	1.05 (0.96-1.15)	1.07 (0.97-1.19)
	adjusted OR	0.96 (0.87-1.05) <sup>b</sup>	1.00 (0.90-1.11) <sup>b</sup>

<sup>a</sup> after introduction of variable 'type of education'

<sup>b</sup> after introduction of variable 'grade'