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Special Feature Article

Suicide Prevention for Children and Adolescents: Perspectives from Emergency Medicine and Case Management Interventions

Yoshiyuki TACHIBANA[1,2], Satoshi TSUJI[3], Ryo IWATA[4,5], Chiaki KAWANISHI[6]
1 Division of Infant and Toddler Mental Health, Department of Psychosocial Medicine, National Center for Child Health and Development
2 Department of Perinatal Mental Health, Shinshu University Graduate School of Medicine
3 Division of Emergency Medicine, Department of Pediatrics, National Center for Child Health and Development
4 Department of Psychiatry 1st, National Center for Neurology and Psychiatry
5 Department of Preventive Intervention for Psychiatric Disorders, National Institute of Mental Health, National Center for Neurology and Psychiatry
6 Department of Neuropsychiatry, Sapporo Medical University Graduate School of Medicine
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Abstract

Children and adolescents with suicidal ideation or after suicide attempts are sometimes brought to pediatric emergency rooms, but no system has been established to deal with them.

In this study, we examined 14 patients who presented to the emergency department of a children's hospital in Tokyo because of suicidal ideation or previous suicide attempt. Continuous support was provided except in cases where the patients were receiving treatment at other hospitals, but there were no visits to the hospital because of attempted suicide within 6 months after the initial visit. In the field of child psychiatry,

continuous support through case management intervention may be effective in preventing suicide.

Next, we reviewed and discussed randomized controlled trials of case management interventions for suicide attempters in Japan and abroad. The effectiveness of case management interventions in reducing the rate of suicide reattempts is inconsistent, with different studies reporting different degrees of effectiveness. On the other hand, it was demonstrated to be effective in improving follow-up rates and psychiatric symptoms, and it is recommended that these outcomes be considered when considering interventions for child and adolescent suicidal ideation and suicide attempts.

In case management interventions to prevent child and adolescent suicide, it is important for medical care, health care, welfare, and education fields to work together to support children and their families.

Keywords: suicide prevention, emergency medicine, emergency department, case management, multi-professional collaboration

Introduction

In pediatric emergencies, patients with suicidal ideation may be seen, and patients may be brought to the hospital after a suicide attempt. The greatest risk for suicide completion is a history of suicide attempts, and the prevention of suicide re-attempts is important in suicide prevention[4]. In particular, the emergency room is an important place for suicide prevention because it provides opportunities to intervene to prevent suicide attempts[12]. However, in the pediatric field, there is no established system for treating patients who present to the emergency room with suicidal ideation or attempts. In this paper, we first describe the actual conditions of patients who visited the emergency department of the National Center for Child Health and Development (NCCHD) for suicidal ideation and attempts. We also introduce overseas studies of case management interventions for child and adolescent suicide attempters, and discuss the possibility of applying these interventions to emergency medicine in Japan. Furthermore, we will discuss the possibility of collaboration between emergency medicine, psychiatry, and community agencies for the prevention of child and adolescent suicide.

I. The Actual Condition of Visits by Patients with Suicidal Ideation or Suicide Attempt in Emergency Medicine at the National Center for Child Health and Development

We conducted a survey to understand the actual conditions of patients with suicidal ideation and suicide attempts who visited the emergency department of a children's hospital. Specifically, we conducted a retrospective review of cases in which an evaluation decision regarding suicide or suicidal ideation was made using the electronic medical record among patients who visited the emergency department of the NCCHD between January 1, 2017 and December 31, 2019. Approval for this study was obtained from the center's research ethics review committee. This paper only gives an outline of a fact-finding study that was reported in a separate paper; please refer to that paper for details[19)]

Fourteen cases (3 boys and 11 girls) with a median age of 15 years (interquartile range 12.8-17 years) were included in the study (Table 1). Eight of the 14 cases had a history of psychiatric treatment (6 of them at the NCCHD), and 6 had no history of psychiatric treatment. Patients without a history of psychiatric consultation were followed up at the mental health department of the NCCHD after a visit for suicide attempts. Six patients were diagnosed with overdose, 2 with self-injury, 1 each with panic attack with suicidal ideation and dissociative symptoms, and 2 with suicide strangulation. There were no fatalities, and only 1 case of suicide required cardiopulmonary resuscitation followed by systemic management. In the 14 patients with suicide attempts or suicidal ideation who visited the NCCHD, continuous support was provided unless the patient was already receiving treatment at another hospital. As a result, there were no patients with suicide attempts who visited the NCCHD during the first 6 months after the visit. Visits to other hospitals for suicide attempts during the first 6 months after the visit were not investigated.

It has been reported that approximately 90% of suicide victims have some form of psychiatric disorder[3)5)], and in the present survey conducted at the NCCHD, all patients were considered to have psychiatric disorders. Emergency medical visits for suicidal ideation and suicide attempts due to such psychiatric problems can be a starting point for intervention to prevent suicide attempts[1)11)]. At the NCCHD, when a patient presents to the emergency department with suicidal ideation or attempt, the emergency physician performs a physical evaluation, and a child psychiatrist responds if there is no physical problem

and psychiatric intervention is necessary. Child psychiatrists provide psychological crisis intervention and follow up by introducing social resources in collaboration with other institutions, as appropriate. In the strategic research project for preventing suicide in Japan (ACTION-J) conducted by Kawanishi et al., the effectiveness of case management intervention for adult suicide attempters in preventing reattempts during the 6 months following a suicide attempt has been demonstrated[7]. Although this study did not examine whether or not patients visited other hospitals for suicide attempts during the 6-month period after their emergency visit, 14 patients with suicide attempts or suicidal ideation who visited the NCCHD did not visit the same hospital for suicide attempts during the 6-month period after their visit due to continuous support, except in cases where the patient was receiving treatment at another hospital. This suggests that continuous support through case management intervention may be effective in preventing suicide attempts in the field of child psychiatry.

There are limitations in providing continuous support for attempted suicide by the psychiatry department of a single medical institution alone, and it is necessary to establish a regional system to provide care for attempted suicide by a multidisciplinary team of both in-hospital and out-of-hospital personnel. Suicide prevention research using case management intervention methods has been conducted overseas in the area of children and adolescents, and is discussed in the next section.

II. Case Management Intervention for the Prevention of Suicide Attempts in the Pediatric Field: Findings from Domestic and International Intervention Studies

Case management is care that is tailored to the individuality of the patient. In the aforementioned ACTION-J, psychological crisis intervention and psychiatric assessment of suicide attempters in the emergency medical setting, followed by continued case management based on the assessment, has been scientifically proven to be effective in deterring suicide attempts and self-injurious behavior for a certain period of time[6)7)]. Case management in the ACTION-J intervention model consists of the following elements:

(i) Psychological crisis intervention using appropriate communication methods

(ii) Accurate psychiatric and psychosocial assessment (including confirmation of suicidal ideation)

(iii) Psychoeducation based on (ii)

(iv) Ongoing case management that

takes into account the individuality of the patient, centered on adherence to psychiatric care.

Case management interventions have been shown to be effective in the field of maternal and child health[17)18)]. Various intervention studies on case management for the prevention of child and adolescent suicidal behavior have been conducted overseas, and here we discuss a randomized controlled trial with a high level of evidence for the application of case management interventions in emergency medical care in Japan.

Spirito, A. et al. compared an intervention that enhanced treatment compliance (standard disposition planning plus compliance) with conventional treatment (standard disposition planning)[15)]. In this study, the intervention group was contacted by telephone by a case manager at 1, 2, 4, and 8 weeks after discharge from conventional inpatient psychiatric treatment and during outpatient treatment. Telephone outreach was structured to provide support, facilitate problem solving, and help remove barriers to receiving care. In addition, as appropriate, there were interventions to provide information, encourage the expression of feelings, provide problem-solving strategies as needed, promote cognitive restructuring of the problem, and support help-seeking. Although there was no effect on follow-up rates at 3 months, the results showed an increase in follow-up rates after adjusting for covariates in community service receipt rates.

Asarnow, J. R. et al. used a psychological crisis intervention session for family members to motivate follow-up treatment and telephone follow-up after discharge (family intervention for suicide prevention: FISP)[2)]. In the psychological crisis intervention sessions, the participants were asked to reconstruct their perception that suicide attempts are SOS calls for their children, to convey the importance of outpatient psychiatric treatment, to promise not to take measures that could lead to risky behavior, and to use safe coping strategies in the event of future crisis situations. They also strengthened family support, discussed what triggers suicidal behavior using a "Distress and Impact Thermometer", and devised and implemented safe coping strategies that would lower the temperature on the "Distress and Impact Thermometer" in a crisis situation. A "safe coping method card" was also created and used as a reminder for the patient to look at the card and use safe coping methods during crisis situations. This program was effective in improving compliance with outpatient treatment.

Morthorst, B., et al. tested whether an

active outreach intervention after suicide attempts was more effective than conventional medical treatment in reducing the frequency of suicidal behaviors. In the intervention group program, psychological crisis intervention was provided to children who attempted suicide to support flexible problem solving, and active outreach was conducted[12]. The outreach included support to motivate patients to seek treatment, active support for outpatient appointments, and treatment compliance after emergency response. In addition to traditional treatment, the intervention included 8-to-20 flexible outreach consultations with a professional nurse (case manager) over a 6-month period. Consultations were held in the patient's home or at a café, according to the patient's preference, and with related support personnel as needed. The case manager also consulted with family members and suggested that other support persons be included in the consultation process. The program was not shown to be effective in reducing the rate of suicide reattempts.

Rengasamy, M. et al. conducted a telephone intervention for children that had been discharged from a child and adolescent psychiatric ward after having initially been admitted for suicide attempts [13]. In the intervention group, a case manager called the child and his/her parents for 10-to-20 minutes at 1, 7, 14, 30, 60, and 90 days after discharge. Parents on the phone generally addressed concerns about suicide reattempts and concerns about follow-up treatment. The intervention for the patient him/herself consisted of an assessment of suicidal ideation using a questionnaire (Columbia Suicide Severity Rating Scale) and a discussion of safe coping strategies when suicidal ideation intensified. In addition, the intervention assessed the individual's confidence in his or her ability to self-administer safe coping strategies, short- and long-term goals, the perceived usefulness of the intervention, and the ability to choose to live. The participants and their parents/guardians were also asked to rate their overall health, medication and firearms safety, and whether they felt that the intervention was helpful for them. The program reduced suicidal behavior at 90 days and increased the individual's confidence in his or her ability to implement safe coping strategies.

The results of the several randomized controlled trials described above are inconsistent, with varying degrees of effectiveness of case management interventions at reducing rates of suicide reattempts across studies. On the other hand, the studies showed efficacy in improving follow-up rates

and psychiatric symptoms. It is important to improve treatment compliance and mental health from the perspective of preventing suicide attempts, and it is important to follow up children who have made suicide attempts with these factors in mind. In all of the intervention programs described above, follow-up is conducted by social resources in the facility and community. In case management, follow-up should be conducted while introducing social resources, as appropriate. However, it may be difficult to conduct case management because there are no child psychiatrists, clinical psychologists, social workers, or other staff members at the facility. In the following section, we will discuss how to respond to the absence of such social resources in the home institution in cooperation with the community to prevent suicidal re-contemplation using social resources in the community.

III. Cooperation Between Emergency Medical Care, Psychiatric Care, and Community Agencies for the Prevention of Child and Adolescent Suicide

1. Problems in the Care of Suicidal Ideation and Suicide Attempts in Children and Adolescents

In order to consider collaboration between emergency medical care, psychiatric care, and community agencies for the prevention of suicide attempts in child and adolescent patients, we first considered the problems in the care of children who have attempted suicide. When a child is transported to a general emergency medical institution, only physical treatment is provided, and the child may go home without much psychosocial care. In addition, there are few medical institutions that can provide child psychiatric care within emergency medical institutions. When a patient is treated at a medical institution that does not have a child psychiatry department, it is desirable that the social worker find a nearby child psychiatry institution to provide ongoing support for the child. However, the reality is that it is difficult to make appointments for new patients at child psychiatric institutions, making it difficult to follow up with them. In addition, some medical institutions do not have social workers, and it is difficult for emergency physicians and nurses to find child psychiatric institutions. It would be desirable for public health nurses in municipalities that are taking measures to prevent suicide attempts to provide social work services, but such a system is not yet in place in many areas. Although there is the problem of "linkers" within and outside the hospital, and social resources for the recipients, it is desirable to support children and their

families by maximizing the use of available social resources according to the actual situation in the community.

2. Case Management Intervention for the Prevention of Suicidal Attempts

The collaboration between emergency medical care and psychiatric care for the prevention of suicidal reattempts in child and adolescent patients will be discussed from the perspective of case management intervention. In the case management intervention in ACTION-J described above, psychological crisis intervention for patients with suicide attempts is conducted by the staff of the medical institution to which the patient was transported. In addition, psychiatric evaluation is performed by psychiatric staff if the medical institution has a psychiatry department. The risk of suicidal ideation, psychosocial status (family situation, school situation), and other factors are assessed. It is also important to check the status of consultations with consulting institutions and medical services provided.

For the prevention of suicidal reattempts, it is important to identify risk factors and protective factors as part of the psychosocial assessment, and to reduce or weaken risk factors and increase or strengthen protective factors[8]. Risk and protective factors for suicide in children and adolescents are listed in Table 2[8]. In addition, it is important to provide psycho-education for the prevention of suicidal reattempts[10]. As for case management intervention, if the co-medical staff can handle the case, they can act as case managers, introduce social resources, and provide follow-up care. If no such staff is available, the physician in charge should provide case management in addition to outpatient follow-up.

Concerning case management intervention for children and adolescents, it is important to collaborate with education, health care, and welfare from the viewpoint of increasing and strengthening the protective factors mentioned above. Among these factors, family relationships can be both a risk factor and a protective factor, so intervention with the family is extremely important[14][16]. Risk factors include problems with school friendships, bullying, and academic problems. Medical care cannot intervene in these areas, so collaboration with education is important.

3. Collaboration with Education, Health Care, and Welfare in Case Management Intervention

In order for medical personnel to introduce social resources to support children and families in case

management interventions, it is important to understand the educational, health care, and social welfare consultation services with which to collaborate. In case management intervention starting from the emergency scene, it is considered important to collaborate with local education, health care and welfare, and medical care, as shown in Figure 1. The following is a description of the contact information for these collaborations.

In the case of collaboration with education, it is advisable to contact the vice-principal who serves as the point of contact. In such cases, it is important to have the school respond as an organization, and if the homeroom teacher or school nurse who deals with the patient individually is contacted first, the school's response as an organization may take a back seat. Contact with the vice-principal is considered to facilitate the subsequent cooperation with the parties concerned in the school.

For cooperation with public health care, it is advisable to contact public health nurses in charge of mental health at district or local municipal health centers, or child and family support workers, psychological support workers, and public health nurses at comprehensive child-rearing family support centers. According to the Basic Act on Suicide Countermeasures, each prefecture and municipality is obliged to establish a prefectural suicide prevention plan and a municipal suicide prevention plan, respectively. However, the nature of regional cooperation differs depending on the social resources established in the region. Municipal health centers are basically supposed to provide continuous support for the care of persons who have attempted suicide, but the actual situation differs depending on the local health system. In some cases, the district public health nurse or mental health nurse is in charge, while in other cases, the child and family support worker or psychological support worker at the comprehensive child and family support center may be in charge. When collaborating with the health center as a medical institution, it is advisable to first contact the local health center or comprehensive support center for children and families, and if the corresponding department is different, ask which department to contact, and then consult with the person in charge of that department. The regional center for suicide countermeasures, which supports the formulation, progress management, and verification of the regional suicide prevention plan of each municipality as an area manager within its jurisdiction, is aware of the social resources for suicide prevention in that region. It would be beneficial to

collaborate with the center and work with the local community health center.

From the perspective of child welfare, cooperation with the child guidance center is necessary in cases of child abuse. The functions of child guidance centers are broadly classified into five categories: consultation on (i) foster care, (ii) health, (iii) mental and physical disabilities, (iv) delinquency, and (v) upbringing[9], but "consultation on the prevention of child suicide" is not assumed. However, the child guidance center plays a role as a last bastion to protect the safety of children in the community, and may need to collaborate with the child guidance center in cases where there is concern that a child may attempt suicide again due to serious problems at home. Child guidance centers provide support for many children who have experienced severe childhood adversity, and it has been shown that childhood adversity is a high-risk factor for suicide[20]. Although child guidance centers are currently under pressure to respond to abuse, in order to support children with suicidal ideation, it is desirable to include "response to child suicide prevention" in the consultation function work of child guidance centers.

4. Division of Roles in Multidisciplinary Cooperation

When medical institutions liaise with related institutions, it is advisable, to some extent, to discuss which institution should take the initiative in the case in question and which institution should be expected to play what role. Although there may be differences of opinion between medical institutions and educational, health, and welfare institutions, early awareness of the roles of the institutions involved will prevent the case from falling between the institutions involved and the responsibilities from becoming ambiguous. In such cases, it is important to discuss which institution will be the primary institution in charge, and the institutions involved should work together based on a common understanding to support the individual and family.

Conclusion

In this paper, we have discussed a system for supporting children with the cooperation of relevant local institutions, starting with pediatric emergency medical services, in order to prevent suicide among children. As in the case of suicide prevention for adults, continuous support through case management intervention for suicidal ideation and suicide attempts in children and adolescents may be effective in preventing suicide attempts. Concerning case management

intervention for the prevention of suicide reattempt in children, which starts at the emergency scene, psychological crisis intervention, psychiatric evaluation, and psychoeducation are almost the same as those for adults, but it is important to pay attention to the special characteristics of children in introducing social resources as needed and to collaborate with education, health, welfare, and other organizations. Case management intervention in the area of children and adolescents is difficult due to the involvement of multiple organizations, and it is desirable to establish a system for child suicide prevention in the community in which education, public health, welfare, and medical care collaborate.

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表 1　対象患者の概要

年齢（歳）	性別	かかりつけ診療科	既往疾患	緊急受診の動機（主訴）	同診察時の新規診断
10 歳代後半	女	国立成育医療研究センターこころの診療部（児童精神科）	ASD，ADD，うつ病	過量内服，自殺念慮	
10 歳代後半	女	国立成育医療研究センターこころの診療部（児童精神科）および内分泌科	Ⅰ型糖尿病，適応障害	パニック発作・自殺念慮	
10 歳代後半	女	国立成育医療研究センターこころの診療部（児童精神科）	摂食障害，ASD	自殺念慮	
10 歳代後半	男	国立成育医療研究センターこころの診療部（児童精神科）および内分泌科	Ⅰ型糖尿病	過量内服・自殺念慮	急性ストレス障害
10 歳代半ば	女	精神科診療所	睡眠障害	過量内服・自殺念慮	うつ病
10 歳代半ば	女	なし	なし	過量内服・自殺念慮	適応障害
10 歳代半ば	女	なし	なし	過量内服・自殺念慮	適応障害
10 歳代半ば	女	なし	なし	縊頸	うつ病
10 歳代半ば	女	精神科診療所	自傷	自傷行為	うつ病
10 歳代前半	男	国立成育医療研究センターこころの診療部（児童精神科）	ASD，うつ病，心的外傷性ストレス障害	うつ状態・自殺念慮の悪化	
10 歳代前半	女	なし	なし	自傷行為	適応障害
10 歳代前半	女	国立成育医療研究センターこころの診療部（児童精神科）	ADHD，ASD	縊頸（心停止蘇生後）	
10 歳代前半	女	なし	なし	過量内服・自殺念慮	うつ病，適応障害
9	男	なし	なし	不随意運動・性格変容（脳炎疑い）・自殺念慮	ASD，ADHD，転換性障害，解離性障害

ASD：自閉スペクトラム症，ADD：注意欠如症，ADHD：注意欠如・多動症
（文献 19 より作成）

Table 1: Summary of Patients
Age (years) Gender Department of family practice Existing disease Motive for emergency visit (main complaint) New diagnosis at the time of the visit

Teens
Late teens Female National Center for Child Health and Development, Department of Mental Health (Child Psychiatry) ASD, ADD, Depression, Overmedication, Suicidal ideation
Teens
Late teens Female National Center for Child Health and Development, Department of Mental Health (Child Psychiatry) and Endocrinology Type I diabetes mellitus, Adjustment disorder, Panic attack, Suicidal ideation
Teens
Eating disorder, ASD, Suicidal ideation
Teens
Second half Male Department of Psychosomatic Medicine (Child Psychiatry) and Endocrinology, National Center for Child Health and Development Type I diabetes mellitus, overdose, suicidal ideation, acute stress disorder
Mid-teens
Mid age group Female, psychiatric clinic, sleep disorder, overdose, suicidal ideation, depression
10s
Mid Female None None Overdose/suicidal ideation Adjustment disorder
Adaptation disorder
Mid Female None None None Overdose/suicidal ideation Adjustment disorder
10s
Mid Female None None None suicide suicide ideation Depression
10s
Mid Female Psychiatric clinic, self-injury, self-injury, depression
Depression
Depression, Traumatic stress disorder, Depression, Aggravated suicidal ideation, Depression, Depressive disorder, Traumatic stress disorder, Depression, Aggravated suicidal ideation
10s Early teens
Self-injurious behavior Adjustment disorder
Early teens
Early teens Female, National Center for Child Health and Development, Department of Mental Health (Child Psychiatry), ADHD, ASD, suicide (after cardiac arrest and resuscitation)
10 yrs old

Depression, adjustment disorder 9 Male None None None

9 Male None None Involuntary movements, personality change (suspected encephalitis), suicidal ideation ASD, ADHD, conversion disorder, dissociative disorder

ASD: autistic spectrum disorder, ADD: attention deficit disorder, ADHD: attention-deficit/hyperactivity disorder

(Based on Reference 19)

表 2　子どもの自殺の危険因子と保護因子

危険因子	保護因子
自殺未遂歴（複数回の自殺未遂歴は自殺の危険の高さに関連する）	他者との絆
自殺願望と意図	家族のサポート
精神障害	仲間との絆
その他の行動や特徴	肯定的な相互交流
・非自殺性自傷	良好な社会適応
・パーソナリティ障害の特徴	決断能力
・絶望的	問題解決能力
・衝動的	
・攻撃的/過去に暴力行為	
・睡眠障害	
・学習障害や学習困難	
精神科病院からの退院	
家族の精神科既往歴	
性的虐待	
身体的虐待・ネグレクト	
いじめ	
問題の多い仲間との関係	
社会のなかに溶け込めない	
家族からのサポート・愛着・コミュニケーションが乏しい	
同性愛	
両性愛	
LGBT	
他者の自殺の経験	
自殺企図の手段が手に入りやすい	

（文献 8 より作成）

Table 2 Risk Factors and Protective Factors for Child Suicide

Risk Factors Protective Factors

History of Suicide Attempts (History of multiple suicide attempts is associated with a higher risk of suicide)

Suicidal ideation and intent
Mental disorder
Other behaviors and characteristics
- Non-suicidal self-harm
- Characteristics of personality disorders
- Hopeless
- Impulsive
- Aggressive/past violent behavior
- Sleep disturbances
- Learning disabilities and difficulties in learning

Discharge from psychiatric hospital
Family psychiatric history
Sexual abuse
Physical abuse/neglect
Bullying
Problematic peer relationships
Inability to integrate into society
Lack of support, attachment, and communication from family
Homosexuality
Bisexuality
LGBT
Experience of others' suicides
Easy access to means of suicide attempts Bonding with others

Bonding with Others
Family support
Bonding with peers
Positive interactions
Good social adjustment
Ability to make decisions
Ability to solve problems
(Based on Reference 8)

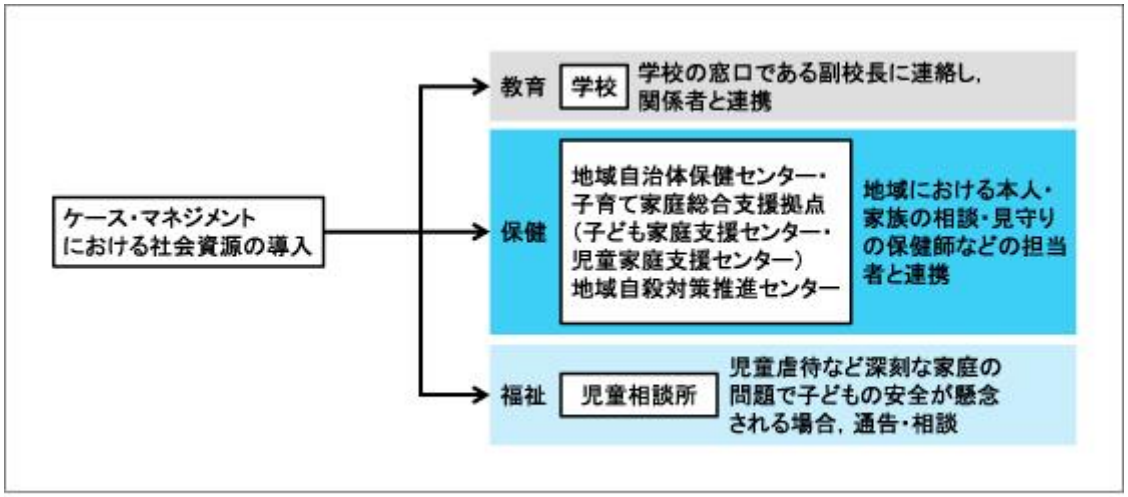

図　児童・思春期症例でのケース・マネジメント介入における教育・保健・福祉の連携

Figure 1 Collaboration of Education, Health, and Welfare in Case Management Interventions in Child and Adolescent Cases