First-Aid Use of Epinephrine Auto-injectors Among Teachers and School Nurses in Schoolchildren with Allergies in Japan: A Literature Review

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Abstract

Aim This paper aims to assess teachers’ and school nurses’ awareness of Epinephrine auto-injectors and approaches to improve their first-aid skills in the use of these injectors in Japanese schools.

Methods Igaku Chuo Zasshi and Citation Information by NII were searched using the search formula (School) AND (EpiPen) in Japanese-language articles. The followings were the inclusion criteria: Japanese literature; subjects were teachers or school nurses; investigated awareness of Epinephrine auto-injectors or reported an approach for improving first-aid use of Epinephrine auto-injectors. Review articles were excluded.

Eligible articles were analysed according to (a) awareness of Epinephrine auto-injectors and (b) approach.

Results Of the 145 articles, 13 met the inclusion criteria. Six articles investigated teachers’ and school nurses’ awareness of Epinephrine auto-injectors or Epinephrine auto-injector. Eight articles reported educational approaches to training and school nurses. Of 13 eligible articles, 1 article reported both teacher’s and school nurses’ awareness, and educational approaches. In awareness articles, almost all teachers and school nurses knew about Epinephrine auto-injector; however, several schoolteachers or school nurses did not know whether children using Epinephrine auto-injector attended their school. Many teachers and school nurses had anxiety about their ability to appropriately deliver an Epinephrine auto-injector injection, their ability to detect anaphylaxis symptoms, when to inject Epinephrine auto-injector and how to use Epinephrine auto-injector.

In almost all lectures described in these educational approach reports, medical doctors and nurses who worked in paediatric hospitals lectured about food allergies, anaphylaxis symptoms and how to use Epinephrine auto-injector. The lectures included a lecture component and a practice component. These lectures improved the understanding and first-aid skills of teachers regarding symptoms, treatment and how and when to deliver an Epinephrine auto-injector injection, and built confidence or relieved anxiety about the appropriate use of Epinephrine auto-injector. Of the 8 articles, only 1 had a before-and-after methods evaluation. None of the studies introduced a comparison group.

Conclusion Teachers and school nurses working in Japanese schools attended by children prescribed with an Epinephrine auto-injector need to understand allergic and anaphylaxis symptoms, as well as how and when to deliver an Epinephrine auto-injector injection. The need to understand and have the skill to use allergy and Epinephrine auto-injectors may be satisfied with a lecture and practice course. Further studies are needed, with before-and-after comparisons.

Keywords: Epinephrine auto-injector, anaphylaxis, food allergy, first aid, school nurse
objective tools checking teachers’ understanding or performance, and a comparison group for evaluating whether the lecture adequately covered the proper use of Epinephrine auto-injectors in real-world situations where anaphylaxis occurs.

**Background**

In Japan, the number of children with food allergies in 2013 was higher than that in 2004. The peak age of onset of allergy is in childhood. Children have died from anaphylaxis symptoms, indicating the importance of an effective and efficient rapid response.

In Japan, the Epinephrine auto-injector has recently been introduced as a rapid response option in these children. However, Yarino et al.16 reported one case in which the children and parents did not immediately and effectively deliver the Epinephrine auto-injector injection. Mukaida et al.17 also reported that in children with severe allergic reactions, only 25% of injections were delivered by the child, mother, or doctor. To appropriately use an Epinephrine auto-injector, children and parents typically need help from a trained professional.

In 2008, the ‘Assault Guideline for Allergic Disease in School’, which was published by the Japanese Society of School Health, stated that an Epinephrine auto-injector injected by a teacher when the child is unable to use it is not a violation of the Medical Practitioners Law in Japan, indicating that the care of children with anaphylaxis symptoms by teachers and school nurses is strongly urged.

However, teachers’ and school nurses’ knowledge of Epinephrine auto-injectors and how to enhance their skills for using these injectors are still not clarified. Therefore, this paper aims to assess the body of literature on teachers’ and school nurses’ knowledge of Epinephrine auto-injectors, as well as approaches to enhance their skills for using Epinephrine auto-injectors, and to suggest topics for further study in the field.

**Methods**

Electronic databases (Japanese Central Review of Medicine and CiNii) were searched using the search formula (School) AND (Epinephrine auto-injector). The inclusion criteria for this review were articles in Japanese that investigated teachers’ or school nurses’ knowledge of Epinephrine auto-injectors, or that reported on an approach to improve teachers’ first-aid skills regarding the use of these injectors; review articles were excluded. The search period was set from 1 Jan 1983 until 16 Dec 2016 in both electronic databases. Moreover, the reference lists of eligible articles were reviewed manually in order to identify any additional eligible articles. During screening, articles were reviewed and abstraction sheets were introduced to note the specified inclusion criteria, in order to reduce selection bias.

Because this paper aims to clarify teachers’ and school nurses’ knowledge of Epinephrine auto-injectors and the approaches for improving their skills in the use of these injectors, a meta-analysis was not introduced in this review. Therefore, eligible articles were analysed on the basis of two points: evaluation of teachers’ knowledge of Epinephrine auto-injectors and approaches that aimed to improve their skills in the use of these injectors.

**Results**

Of the 145 articles, 13 met the inclusion criteria (Figure 1). Six articles reported teachers’ and school nurses’ knowledge of Epinephrine auto-injector. Eight articles reported on lectures that taught teachers and school nurses about food allergies or how to deliver Epinephrine auto-injector injections. Of these articles, one described both teacher knowledge and an approach.

1. Knowledge articles

In the knowledge articles (Table 1), the oldest was written by Ishii et al. in 2008. They aimed to clarify the differences in duties between public and private schools, and asked school nurses about their school’s handling of Epinephrine auto-injector via a questionnaire in 2006, before publishing the ‘Assault Guideline Against Allergic Disease in School’, which stipulated that the use of Epinephrine auto-injector by teachers in schools did not violate the Medical Practitioners Law. In the article, Ishii et al. reported that schools debated about whether children were permitted to have an Epinephrine auto-injector injection and that the injection was kept by the children themselves or by the school nurse; however, school nurses were not trained on how to keep the Epinephrine auto-injector injection by the school
Fig. 1 PRISMA search results.

pharmacist.

Sasaki et al reported that 10.2% of school nurses did not know whether there were children who were prescribed Epinephrine auto-injector at their school. Suzuki reported that the rate of elementary school teachers who did not know whether children who were prescribed Epinephrine auto-injector went to school was 4% and that of junior high school teachers was 33%. Murai et al reported that the rate was 14%.

Regarding teachers’ knowledge of Epinephrine auto-injector, Ishii et al reported that 37% of public elementary school teachers and 77% of private elementary school teachers knew about the use of Epinephrine auto-injector, with a significant difference between the two teacher groups in 2006. Omotani et al reported 100% of school nurses and 97.9% of elementary or junior high school teachers. Furthermore, Suzuki reported that 96% of elementary school teachers knew about Epinephrine auto-injector, and for junior high school teachers, the rate was 66%. Fujimoto reported that the rate for special-education teachers was 92%. Murai et al reported that 32.6% of school nurse knew how to use Epinephrine auto-injector, and 65.2% of school nurses knew only the name Epinephrine auto-injector but not how to use it.

Regarding participating in a lecture on Epinephrine auto-injector, Omotani et al reported that 70.8% of teachers and 100% of school nurses have participated in
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<th>Number</th>
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<tr>
<td>1</td>
<td>Omotani et al</td>
<td>2016</td>
<td>80 teachers in elementary school, 40 teachers in junior high school and 14 school pharmacists in Osaka Prefecture.</td>
<td>To investigate the current state of the education of school teachers and school pharmacists.</td>
<td>The questionnaire contains the knowledge of allergy and EpiPen manuals and how to use EpiPen.</td>
<td>91.7% had experience contacts with children with allergy; 97.3% had known anaphylaxis; 99.2% had known EpiPen. 77.5% had been lectured about EpiPen. 80.0% had experience of using EpiPen trainer. 87.5% had known how to use EpiPen. 81.7% had known when EpiPen should be injected and only 23% had experience of using EpiPen. 43% of the subjects were asked to answer the questionnaire. The special-education teacher had more confidence of adequately using EpiPen in emergency situations than teacher.</td>
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<td>2</td>
<td>Fujimoto</td>
<td>2016</td>
<td>Parents who had child with food allergy, 32 childminders, and 39 special-education teachers.</td>
<td>To assess the understanding of how to treat anaphylaxis caused by food allergy among parents/guardians of patients who do not carry an EpiPen and school staffs and to assess the actual circumstances of EpiPen use.</td>
<td>After lecture about allergy, the subjects were asked to answer the questionnaire, which contains basic knowledge of anaphylaxis and how to use of EpiPen.</td>
<td>The special-education teacher was more familiar with anaphylaxis than parents who had children without allergy. In childminder, how to use EpiPen was worse familiar with knowledge of anaphylaxis. Of childminder and special-education teacher, approximately 70% had mind that administers a medicine if there were it in school and approximately 90% knew EpiPen. However, only 30% knew the symptoms that should be administered and how to use EpiPen.</td>
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<td>3</td>
<td>Sasaki et al</td>
<td>2015</td>
<td>741 subjects, who participated in a lecture about food allergies and how to use an EpiPen. Participated in the study. Of the subjects, 108 nursing teachers in elementary school or junior high school, 77 teachers in elementary school or junior high school, and 115 childminder were analysed.</td>
<td>To assess the personal experience of school teachers and child-care workers and the presence of a management plan in their facilities against food allergies and anaphylaxis.</td>
<td>The questionnaire contains following enrollment of child who had food allergy and who was prescribed for EpiPen manuals for food allergy in facilities where subject was working. personal experiences.</td>
<td>Of childminder and special-education teacher, approximately 70% had mind that administers a medicine if there were it in school and approximately 90% knew EpiPen. However, only 30% knew the symptoms that should be administered and how to use EpiPen.</td>
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<td>4</td>
<td>Murai et al</td>
<td>2013</td>
<td>72 subjects in Furui city who participated in the lecture (46 nursing teachers, 8 school pharmacists etc)</td>
<td>To examine the effects of the lecture on the EpiPen, including skills practice.</td>
<td>The questionnaire contains following anaphylaxis symptoms: EpiPen, the number of children with food allergies or anaphylaxis handling of children with anaphylaxis anxiety on using EpiPen.</td>
<td>Of childminder and special-education teacher, approximately 70% had mind that administers a medicine if there were it in school and approximately 90% knew EpiPen. However, only 30% knew the symptoms that should be administered and how to use EpiPen.</td>
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<td>5</td>
<td>Ishii et al</td>
<td>2008</td>
<td>185 nursing teachers who worked in KANTO area 62 in public elementary school, 54 in public junior high school, 26 in private elementary school and 53 in private junior high school</td>
<td>To clarify the differences in duties between public schools and private schools.</td>
<td>The subjects were asked to answer the questionnaire.</td>
<td>Of childminder and special-education teacher, approximately 70% had mind that administers a medicine if there were it in school and approximately 90% knew EpiPen. However, only 30% knew the symptoms that should be administered and how to use EpiPen.</td>
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<td>6</td>
<td>Suzuki</td>
<td>2013</td>
<td>29 teachers in elementary school and 24 teachers in junior high school.</td>
<td>To clarify elementary and junior high school teachers' knowledge of food allergies and EpiPen use.</td>
<td>The subjects were asked to answer the questionnaire, which contains recognition of EpiPen.</td>
<td>Of childminder and special-education teacher, approximately 70% had mind that administers a medicine if there were it in school and approximately 90% knew EpiPen. However, only 30% knew the symptoms that should be administered and how to use EpiPen.</td>
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such a lecture. Sasaki et al reported that the rate of participation among teachers working in schools with children who were prescribed Epinephrine auto-injector was significantly higher than that among teachers working in schools where no child was prescribed Epinephrine auto-injector; however, the rate among school nurses did not significantly differ according to the presence of children with allergies. Suzuki reported that the rate among elementary school teachers was 86% and that among junior high school teachers was 8%.

In terms of the rate of teachers using an Epinephrine auto-injector trainer, Omotani et al reported that the rate among teachers was 70.8% and among school nurses was 100%. Sasaki et al reported that the rate of school nurses who never used Epinephrine auto-injector trainers and who worked in schools with children who were prescribed Epinephrine auto-injector was significantly lower than that of school nurses in schools that had no children prescribed with Epinephrine auto-injector (8.0% versus 48.9%). The same trend was observed for teachers (31.6% versus 90.0%).

In terms of the rate of teachers who knew how to use Epinephrine auto-injector, Omotani et al reported that the rate among teachers was 79.2% and among school nurses was 100%. Fujimoto reported that the rate among special-education teachers was 29%. Murai et al reported that 32.6% of school nurses knew how to use Epinephrine auto-injector.

In terms of the rate of teachers who knew when to deliver an Epinephrine auto-injector injection, Omotani et al reported that the rate among teachers was 68.8% and among school nurses was 100%. Fujimoto reported that only 29% of special-education teachers knew how to use Epinephrine auto-injector.

In terms of the rate of teachers who knew about anaphylaxis, Omotani et al reported that the rate among teachers was 91.7% and among school nurses was 95.8%. Murai et al reported that the rate among school nurses was 95.7%. Fujimoto reported that the rate among special-education teachers was 54%.

2. The approach articles

The approach articles are shown in Table 2. Of the eight articles, seven reported on a lecture about food allergies or Epinephrine auto-injector and one reported on a portable manual containing information on anaphylaxis and on Epinephrine auto-injector.

Of the seven articles, five reported that a medical doctor gave the lecture, whereas the other two reported on nurses giving the lecture. In two papers, a pediatric allergy educator gave the lecture.

In terms of the type of lecture, all seven articles introduced the lecture type. In addition, all seven described a skill practice session in the lecture and five described role-play practice in the lecture.

In terms of contents of the lecture session, six articles described the lecture including food allergy symptoms, three described the lecture including anaphylaxis symptoms, three described the lecture including information on how to use Epinephrine auto-injector, two described the lecture including information on when to use Epinephrine auto-injector and one described the lecture including information on the severity of food allergy symptoms. In the skill practice or role-play practice sessions, six of the articles stated that an Epinephrine auto-injector trainer was used. The portable manual by Yanagida et al contained the following: how to evaluate the severity of allergic symptoms, flowcharts according to severity, medication for allergic symptoms and how to use Epinephrine auto-injector.

In terms of the study design, only one, by Yoshino et al, examined the effects of the lecture on the recognition of allergy or use of Epinephrine auto-injector, using a before-and-after test; none included comparison groups. All studies evaluated the effects of the lecture with a questionnaire given to and returned by participants.

The study by Yoshino et al, which introduced a before-and-after test, reported that the lecture significantly enhanced teachers’ and school nurses’ understanding of allergic symptoms, how and when to deliver an Epinephrine auto-injector injection, severity of allergic symptoms and confidence in their ability to appropriately use Epinephrine auto-injector.

Four articles reported knowledge of allergies or Epinephrine auto-injector after the lecture as an approach. Of these, three asked the participants about when to deliver an Epinephrine auto-injector injection, two asked about how to use Epinephrine auto-injector, two asked about anaphylaxis symptoms, two asked about confidence in their ability to appropriately use Epinephrine auto-injector, one asked food allergy symptoms and one asked about severity of allergic symptoms.

On when to deliver an Epinephrine auto-injector injection, the rates of understanding after the lecture...
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<th>Number</th>
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<th>Aim</th>
<th>谁先接受干预</th>
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<th>Outcomes</th>
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<td>4</td>
<td>Murak et al</td>
<td>2013</td>
<td>72 subjects in Fukuoka city who participated in the lecture (68 nursing teachers, 8 school pharmacists, etc)</td>
<td>To examine the effects of the lecture on EpiPen use, including skill practice</td>
<td>医生</td>
<td>讲座内容的总览, 学习内容的总览, 学习内容的总览</td>
<td>讲座的内容的总览, 学习内容的总览, 学习内容的总览</td>
<td>在讲座结束后, 参加者对EpiPen的认识和使用方法有了明显的提高</td>
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<td>5</td>
<td>Takezaki et al</td>
<td>2013</td>
<td>Of 178 participants who were given lecture about food allergy and how to use EpiPen, 167 nursing teachers and 9 teachers</td>
<td>To investigate the rate of familiarity with EpiPen among school officials</td>
<td>医生</td>
<td>食物过敏讲座内容的总览, 学习内容的总览, 学习内容的总览</td>
<td>食物过敏讲座内容的总览, 学习内容的总览, 学习内容的总览</td>
<td>参加者对EpiPen的认识和使用方法的熟悉度有所提高, 但差异不明显</td>
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<td>6</td>
<td>Yoshino et al</td>
<td>2015</td>
<td>532 participants who participated in a lecture about food allergies and how to treat children in an emergency situation (319 school nurses, 99 teachers, 60 school nutritionists, 30 children, 9 emergency medical technicians, and 9 others)</td>
<td>To examine the effects of workshops on food allergy and emergency care using EpiPen trainers for the staff of nursery and elementary schools</td>
<td>医生和儿科医生</td>
<td>讲座内容的总览, 学习内容的总览, 学习内容的总览</td>
<td>讲座内容的总览, 学习内容的总览, 学习内容的总览</td>
<td>参加者对食物过敏的认识和处理方法的熟悉度有所提高, 但差异不明显</td>
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<td>7</td>
<td>Nakahara et al</td>
<td>2015</td>
<td>390 subjects who participated in a lecture about food allergy and using EpiPen (128 children, 27 nursery teachers, 175 teachers, etc.)</td>
<td>To examine the effects of training for using EpiPen, with role-play.</td>
<td>医生和儿科医生</td>
<td>讲座内容的总览, 学习内容的总览, 学习内容的总览</td>
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<td>8</td>
<td>Kusakabe et al</td>
<td>2012</td>
<td>810 subjects in Kanagawa prefecture who participated in the lecture (831 teachers, 329 nurses, etc.)</td>
<td>To examine the effect of lecture by pediatric doctor teachers</td>
<td>儿科医生</td>
<td>讲座内容的总览, 学习内容的总览, 学习内容的总览</td>
<td>讲座内容的总览, 学习内容的总览, 学习内容的总览</td>
<td>参加者对EpiPen的认识和使用方法的熟悉度有所提高, 但差异不明显</td>
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<td>9</td>
<td>Yamagata et al</td>
<td>2014</td>
<td>403 parents who had children with food allergy and 214 teachers</td>
<td>To evaluate the efficacy of a portable manual for the parents of children with food allergy addressing how to respond to the allergic symptoms according to severity assessments</td>
<td>the A-6 size manual</td>
<td>讲座内容的总览, 学习内容的总览, 学习内容的总览</td>
<td>讲座内容的总览, 学习内容的总览, 学习内容的总览</td>
<td>参加者对EpiPen的认识和使用方法的熟悉度有所提高, 但差异不明显</td>
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<td>10</td>
<td>Kusakabe et al</td>
<td>2015</td>
<td>Teachers in school and nursery.</td>
<td>To introduce the approach, nurses taught children about EpiPen. The approach aimed to improve the skills of teachers for treating children with allergies.</td>
<td>儿科医生和学童护士</td>
<td>讲座内容的总览, 学习内容的总览, 学习内容的总览</td>
<td>讲座内容的总览, 学习内容的总览, 学习内容的总览</td>
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<td>11</td>
<td>Masuda et al</td>
<td>2011</td>
<td>229 subjects in childminders, teachers in elementary or junior high school</td>
<td>To evaluate the lecture for skills of using EpiPen.</td>
<td>儿科医生和学童护士</td>
<td>讲座内容的总览, 学习内容的总览, 学习内容的总览</td>
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were 96%\(^6\), 98.3%\(^{10}\) and 53%\(^{13}\).

On how to use Epinephrine auto-injector, the rates of understanding after the lecture were 78%\(^6\) and 87%\(^{12}\).

On anaphylaxis symptoms, the rates of understanding after the lecture were 97%\(^9\) and 73%\(^{13}\).

On the confident use of Epinephrine auto-injector, the rates after the lecture were 60.1%\(^7\) and 33%\(^{13}\).

On food allergy symptoms, the rate of understanding after the lecture was 99%\(^9\).

On severity of allergic symptoms, the rate of understanding after the lecture was 55%\(^{13}\).

**Discussion**

This paper aimed to clarify the level of understanding among teachers and school nurses regarding Epinephrine auto-injectors, as well as approaches to improve the skills needed to use Epinephrine auto-injectors in Japanese schools.

In the first category of articles, it was shown that several teachers or school nurses did not know whether a child prescribed Epinephrine auto-injector attended their school. As the first step in supporting the children, we should first check the retention of children with food allergies or those prescribed Epinephrine auto-injector. Systematically surveying of The Health Inventory for students and contacting their parents is needed.

The eligible articles showed that the rate of Epinephrine auto-injector recognition among teachers or school nurses was between 32.6% and 100%, with it being more than 50% in many of the articles. Furthermore, the rate of those attending a lecture about Epinephrine auto-injector use was between 8% and 100%, with it being more than 70% in many of the articles. These articles suggest that attention towards Epinephrine auto-injector is gradually increasing. However, since approximately half of the teachers are estimated not to know about Epinephrine auto-injector, an approach to Epinephrine auto-injector education for teachers is needed.

When or how to deliver an Epinephrine auto-injector injection were common knowledge gaps among teachers and school nurses. Furthermore, the rate of those using an Epinephrine auto-injector trainer was not high. Since using Epinephrine auto-injector or an Epinephrine auto-injector trainer may facilitate understanding of when and how to use Epinephrine auto-injector, skill practice for Epinephrine auto-injector use is needed. Furthermore, training on appropriate observation of anaphylaxis symptoms is needed because it aids in the understanding of when to deliver an Epinephrine auto-injector injection.

In the approach articles, the lecture that was described covered allergic and anaphylaxis symptoms and how to use Epinephrine auto-injector, which teachers and school nurses wanted to understand. In addition, the skill practice and role-play sessions described in almost all articles introduced Epinephrine auto-injector or an Epinephrine auto-injector trainer. So the rates of understanding regarding food allergies and anaphylaxis symptoms and when and how to use Epinephrine auto-injector were relatively high after these lecture. However, the teachers’ confidence in their ability to appropriately use Epinephrine auto-injector and in assessing the severity of allergic symptoms was relatively low. Thus, the future lectures on Epinephrine auto-injector use should focus more on severity of allergic symptoms, and be held multiple times, in order to enhance their confidence in the ability to appropriately use Epinephrine auto-injector.

Regarding the methodology of the studies, a comparison of participants’ understanding of Epinephrine auto-injector or allergies before and after these lectures was performed in only one article. Objective evaluation of teachers’ and school nurses’ understanding of anaphylaxis symptoms or appropriate use of Epinephrine auto-injector, and a comparison group, was not introduced. Future studies should include the effects of the lecture on teachers’ understanding, objective tools checking their understanding or performance, and a comparison group.

**Conclusion**

This review covered 13 Japanese articles that investigated teachers’ and school nurses’ knowledge of the Epinephrine auto-injector and that reported on lectures to educate teachers or school nurses about Epinephrine auto-injectors. It was found that teachers and school nurses who worked in Japanese schools with children prescribed Epinephrine auto-injectors had the need to understand allergic and anaphylaxis symptoms, as well as how and when to deliver an Epinephrine auto-injector injection. This need may be satisfied by a lecture and practice session taught by doctors and nurses. Further studies are needed, with before-and-after methods, objective tools checking teachers’ understanding or performance and a comparison group.
for evaluating whether the lecture affected teachers’ ability to appropriately use an Epinephrine auto-injector when anaphylaxis occurred among schoolchildren.

**Competing interests**

The author declare that they have no competing interests.

**References**


本邦の学校教員や養護教諭でのアレルギーを持つ生徒への
エピネフリン自己注射初期対応に関する文献レビュー

紅林 佑介
関西医療大学

目的：本レビューの目的は、日本の学校教職員および養護教諭のエピネフリン自己注射薬への認識と、エピネフリン自己注射薬を用いた教職員と養護教諭の救急処置技能を向上させるための試みについて現状を整理し、今後の研究への示唆を得ることとした。

方法：文献検索データベースは医中誌とCiNiiを用い、検索式は「学校 AND エピベン」とした。文献の組み入れ基準は、日本語論文で、対象者を教職員が養護教諭としており、エピネフリン自己注射薬への認識を調査している論文または教職員か養護教諭の救急処置技能を高めるための試みを報告した論文とした。総説論文は除外した。エピネフリン自己注射薬への認識と、試みについて分析した。

結果：145件中、13編を対象論文とした。6編が教職員と養護教諭の認識に関する論文であり、8編は救急処置技能を高める試みを報告した論文であり、内1編は双方の内容を含んでいた。

教職員と養護教諭の認識に関して、ほとんどの教職員と養護教諭はエピネフリン自己注射薬を知っていた。しかしエピネフリン自己注射薬を処方されている生徒等が在籍しているかについて把握していない学校や教職員および養護教諭がいた。多くの教職員や養護教諭が、エピネフリン自己注射薬を適切に使えるか、アナフィラキシー症状を的確に把握できるか、いつどのように注射すればよいのかについて不安を抱いていた。

救急処置技能を高める試みの多くは研修の形式で、小児科医や小児科看護師が講師を務め、取り扱う内容は食物アレルギー、アナフィラキシー症状やエピネフリン自己注射薬の使い方等であった。多くの研修で、講義スタイルと演習スタイルを用いていた。その効果として、食物アレルギーの症状や治療、いつどのようにエピネフリン自己注射薬を注射するか等の理解や救急処置技能が向上したと報告されていた。しかし、その効果を前後比較した論文は1編のみであり、対照群を用いた論文は無かった。

考察：エピネフリン自己注射薬を持つ子どもが通う学校の教職員や養護教諭は、アレルギーとアナフィラキシー症候、いつどのように注射するかといった学習ニーズがある。

それらのニーズは、医師や看護師による講義と演習を組み合わせたスタイルの研修によって学習できるものと思われます。今後の研究では、前後比較法や、理解度を客観的に評価する方法、対照群を用いて効果を検証していくことが望まれる。

Keywords: Epinephrine auto-injector, anaphylaxis, food allergy, first aid, school nurse