



# Stress among Parents of Children with Hearing Loss and How They Deal with It: A Systematic Review

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## Abstract

**Introduction** Parenting a child with hearing loss may be accompanied by high stress levels and several challenges.

**Objectives** The present systematic review was performed to compile the existing literature pertaining to parental stress in parents of children with hearing loss and coping strategies.

**Data synthesis** The databases searched include PubMed/Medline, Scopus, Cochrane Library and Cumulative Index to Nursing, and Allied Health Literature. The systematic review was designed and performed using the Preferred Reporting Items for Systematic Reviews and Meta-analyses statement guidelines. The screening for studies was performed independently by two researchers. Methodological quality appraisal was done using the Mixed methods appraisal tool. Twenty-eight studies were identified and included in the present review, which discussed the stress factors and coping mechanism associated with having child with hearing loss reported by parents. The factors leading to stress were thematically classified into parent/family-related factors, child-related factors, and professionals/service-related factors. The coping strategies were thematically classified into improved support systems and better professional resources.

**Conclusion** The present systematic review was an attempt at exploring the various stress causing factors among parents of children with hearing loss. The various coping strategies would help in better planning services for these parents and helping to lessen the stress.

## Keywords

- ▶ hearing loss
- ▶ parents
- ▶ children
- ▶ stress
- ▶ coping mechanism

## Introduction

Healthcare professionals such as audiologists and otorhinolaryngologists break the news about hearing loss to the

parents. The news about the hearing loss diagnosis of their child is a life-changing moment in parents' lives. Kushalnagar et al.<sup>1</sup> have speculated that ~ 96% of children with hearing

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loss are born to parents with normal hearing. Therefore, these parents may not much knowledge about hearing loss, its consequences, as well as habilitation options for their child. When they get to know that their child has permanent hearing loss, it adds an entirely new dimension to parental life circumstances and stress.

Parenting stress comprises a complicated and persistent series of challenges faced by individuals while parenting, and it involves adapting to the demands of the job.<sup>2,3</sup> Parenting stress leads to negative repercussions on parenting; this, in turn, leads to poor psychosocial function and socioeconomic growth, as well as marital discord. Parents of children with disability have higher stress levels, which are chronic in nature. Elevated stress levels have been found among parents of children with physical, mental, and psychological problems as well as developmental issues.<sup>4,5</sup> The reaction toward a situation varies among individuals and so, too, do coping mechanisms. The coping process consists of two main strategies: one being problem-focused and the other being emotion-focused. Using problem-focused strategies, an individual will act to take some action against the stressful situation, whereas using emotion-focused strategies involves mental efforts that help to reduce the stress.<sup>6</sup>

The parents of children with hearing loss often feel that they are not capable enough to cope up with the demands of their child, as they cannot respond to his/her communication needs. They are highly dependent upon the healthcare experts for their help and guidance. There are few studies available in the literature exploring the lived experiences and stress levels among parents of children with hearing loss as well as their coping strategies. The present systematic review aimed to compile the existing literature pertaining to parental stress in parents of children with hearing loss and their coping strategies. This would enable us to have a more complete understanding of the contributors of stress in the process of diagnosis to the habilitation of a child with hearing loss, and the coping strategies practiced by these parents to overcome stress.

## Review of literature

The present systematic review was designed and performed using the Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) statement guidelines.

### Types of studies, participants, outcome measures

The review included English language studies published from January 2000 to December 2019. Case reports, case studies, letters to editors, and gray literature were excluded. Studies performed among parents of children with permanent hearing loss with or without amplification were included. Studies performed primarily in other family members/caregivers/healthcare professionals were excluded. Studies performed in parents of children with temporary hearing loss due to any conductive pathology were excluded. The outcome measures were not limited and included quantitative and qualitative measures of assessing stress and

tension associated with having a child diagnosed with hearing loss. The review also targeted coping mechanisms that helped the parents to deal with the diagnosis and further habilitation of the child.

### Search methods for identification of the studies

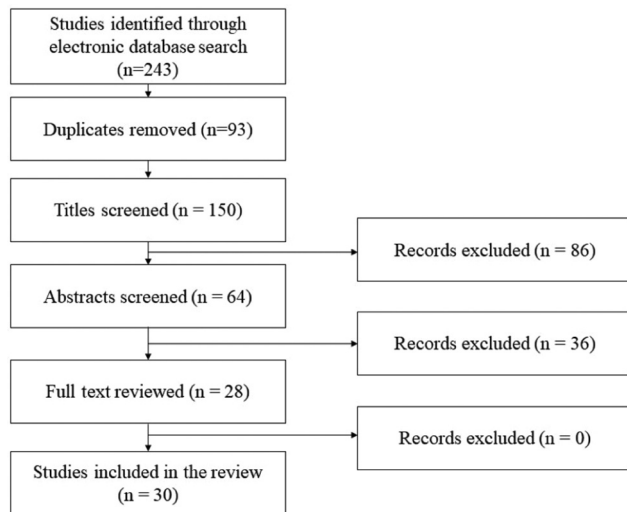
The electronic databases PubMed/Medline, Scopus, Cochrane Library and Cumulative Index to Nursing and Allied Health Literature (CINAHL) were searched for identification of the relevant studies. The keywords included those relevant to the aim of the present review, such as *child with hearing loss*, *child with deafness*, *deaf child*, *parent*, *mother*, *father*, *stress*, *tension*, and *coping mechanism*. The Boolean operators 'AND' and 'OR' were used to frame the search strings. The search strings were developed and applied across the different electronic databases. An example of a search string used is as follows: (child\* with hearing loss) OR (child\* with deafness OR deaf child\*) AND (parent\* OR mother\* OR father\*) AND (stress OR tension OR coherence OR [coping mechanism]).

### Data collection and analysis

The studies obtained from different databases were pooled together into a reference management software, Mendeley desktop (Mendeley Ltd., London, United Kingdom). Duplicate studies were excluded. Title and abstract screening were performed independently by the first two authors based on the inclusion criteria. Full-text articles were retrieved for the shortlisted abstracts. Any disagreements between the reviewers were resolved through discussion. A predesigned data extraction form was used for the present study. The data extraction form was used to extract information such as study design, location of the study, participants, outcome measure used, stress levels, and coping mechanism to overcome this stress.

### Methodological quality appraisal

The methodological quality appraisal was performed using the Mixed methods appraisal tool (MMAT).<sup>7</sup> Mixed methods appraisal tool is a quality appraisal tool designed for carrying out quality appraisal for studies with different study designs (such as qualitative, randomized control trials, non-randomized control trials, descriptive, quantitative, and mixed methods) included in a systematic review. The tool comprises of two screening questions, followed by five questions for each of the different study designs. If the response for the first two screening questions is 'no' or 'can't tell' for one or both the questions, it is indicative of the paper not being an empirical study. Non-empirical studies (such as theoretical studies or reviews) cannot be appraised using the MMAT. Next, for each of the included studies, the appropriate study design is chosen. Each study is rated on five criteria using the rating of 'yes', 'no,' and 'can't tell.' Two reviewers were involved independently in the rating process as per the procedural guidelines. Overall, the reviewers shared a 95% agreement while rating, and any disagreements were resolved to arrive at a mutual consensus.



**Fig. 1** Prisma chart

The search strategy applied across the different electronic databases identified 243 articles, 93 out of which were duplicates and, thus, eliminated. Among the 150 remaining studies, 93 titles were identified, out of which 64 abstracts were selected. After title and abstract screening, 30 studies were shortlisted. The full texts for these 30 studies were retrieved. The screening for the studies at each stage was based on the predefined inclusion and exclusion criteria. Based on full-text review, all 30 studies were found suitable for inclusion in the review. It is worth to note that all the studies using a quantitative framework used validated questionnaires/test materials.

► **Fig. 1** illustrates the PRISMA chart for the screening process.

### Study characteristics

The 30 studies included 2,941 parents of children diagnosed with hearing loss. Among these, 27 studies used a quantitative approach (questionnaires, surveys, scales), while 3 used a qualitative approach (parent interviews). Nine studies were performed in the USA, while four each were performed in Germany and Israel, and two each were performed in Malaysia and India. A single study was performed in each of the following countries: Australia, Canada, China, Denmark, Iran, Korea, Netherlands, Sweden, and Turkey. The publication dates spanned from 2002 to 2018.

► **Table 1** summarizes the characteristics of all the included studies ( $n = 30$ ).

► **Table 2** depicts the factors leading to stress among parents. Twenty-four different factors leading to stress among the parents were identified across all the studies and were divided into three broad themes: parent/family-related, child-related, and professional services-related. As one can observe, the parent/family-related and child-related themes presented the most factors.

Fifteen coping strategies were identified for how these parents deal with the stress associated with having a child with hearing loss. These were broadly classified into two

main themes: general support seeking and utilization of professional services. ► **Fig. 2** displays the strategies used by parents to deal with the stress associated with having a child with hearing impairment.

### Quality appraisal

The MMAT was used to conduct the quality appraisal of the included studies, based on the study design followed. Twenty-five studies were rated using the items for quantitative studies (items 4.1–4.5) while three were rated using the items for qualitative studies (1.1–1.5). ► **Table 3** depicts the quality appraisal of the included studies.

### Discussion

The present systematic review was performed to compile the existing literature pertaining to parental stress among the parents of children with hearing loss. Additionally, it explored the coping strategies adopted by these parents to deal with this stress. In order to overcome publication bias, the electronic search was conducted in four databases, and two researchers independently reviewed the articles to be included at each stage of the review process. Thirty studies were included in the review, with a total of 2,883 parents of children with hearing loss.

### Factors associated with stress as reported by parents of children with hearing loss

Twenty-four different factors leading to stress among the parents were identified across all the studies. As previously mentioned, these were divided into three broad themes: parent/family-related, child-related, and professional services related. Most factors were captured by the parent/family-related and child-related themes.

Eleven factors related to the parents or family themselves. Six studies identified the two most common factors to be low income<sup>9,15,19,23,32,37</sup> and drastic reduction in the quality of life at the time of diagnosis, with a gradual improvement.<sup>10,13,16,23,32,35</sup> The diagnosis of hearing loss in their child produced a catastrophic reaction in the parents and, hence, they reported a drastic reduction in quality of life immediately after diagnosis. With time, there was a gradual improvement in the quality of life, as access to intervention improved. The next three most common factors were related to the influence of society and reactions. These included reduced family support and lack of family cohesion,<sup>14,26,36</sup> reduced social support,<sup>9,29,32,37</sup> and socioemotional concerns.<sup>12,34</sup> Parents are often concerned about the reaction of society and acceptance of their child. The stigma associated with having a child with disability also makes the parents isolate themselves from the society, which is another stress-inducing factor due to the lack of a support system. The next factor was the lack of acceptance of having a child with disability. Lower acceptance leads to higher stress levels.<sup>30,37</sup> The other stress inducing factors included lower education,<sup>14</sup> lack of time for oneself,<sup>16</sup> lower self-competencies,<sup>30</sup> and communication barriers with the child.<sup>19</sup>

**Table 1** Characteristics of the included studies

Study Id	Location	Study design	Details of the parents	Details of the children (gender, age)	Outcome measures	Validated/developed
Lederberg <sup>8</sup>	USA	Longitudinal	23 hearing mothers of CWHL and 23 hearing mothers of hearing children	23 CWHL (13 girls, 10 boys; 51.4 ± 1.7 months; range 48–57 months) 23 CW normal hearing (13 girls, 10 boys; 50 ± 1.7 months; range 48–53 months)	Questionnaire on resources and stress short form (QRS-F), Parenting stress index (PSI), Social support questionnaire	Validated
Pipp-Siegel <sup>9</sup>	USA	Not mentioned	184 hearing mothers of CWHL	184 CWHL (73 boys, 111 girls; 26.04 ± 13.60 months; range 6 to 67 months)	Parental stress index-short form (PSI/SF), parenting daily hassles scale, family support scale, Minnesota child development inventory-expressive language scale	Validated
Spahn <sup>10</sup>	Germany	Cross sectional	154 parents of CWHL (81 mothers, 73 fathers); 103 parents of CWCI (57 mothers, 46 fathers)	154 CWHL (6.8 years; range 2–16 years), 103 CWCI (7 years; 2 to 16 years)	Self-assessment of parental emotional state, initial information questionnaire, treatment expectations, family climate scale	Validated
Hintermair <sup>11</sup>	Germany	Not mentioned	235 mothers of CWHL	235 CWHL (8.13 ± 3.1 years; 1–13 years)	Sense of Coherence questionnaire (SOC/short form), stress questionnaire (SOEBEK), Life satisfaction scale	Validated
Hintermair <sup>12</sup>	Germany	Questionnaire based	213 parents of CWHL (200 hearing mothers, 13 mothers with hearing loss; 206 hearing fathers, 7 fathers with hearing loss)	213 CWHL (93 girls, 120 boys; mean age 9.9 years)	Parental stress index (PSI), strength and difficulties questionnaire, sense of coherence questionnaire, social support questionnaire	Validated
Burger et al. <sup>13</sup>	Germany	Prospective	123 parents (60 fathers, 63 mothers) of CWCI and CWHL.	33 boys, 34 girls; mean 38 months	Parental psychic stress, German version of symptom checklist (SCL-90-R), the everyday life questionnaire	Validated
Weisel et al. <sup>14</sup>	Israel	Cross sectional	64 mothers of CWCI	64 CWCI (32 girls, 32 boys; 72.66 ± 45.8 months; range 9 months to 14.6 years)	Family adaptability and cohesion evaluation scale, parental stress index/short form (PSI-SF), attitudes toward CI	Validated

(Continued)

Table 1 (Continued)

Study Id	Location	Study design	Details of the parents	Details of the children (gender, age)	Outcome measures	Validated/developed
Zaidman-Zait. <sup>15</sup>	Canada	Not mentioned	31 parents (26 mothers, 5 fathers) hearing parents of CWCI	31 CWCI (6.32 ± 3.93 years; range 12 months to 13 years)	Parental stress index/short form (PSI-SF), life satisfaction scale	Validated
Meinzen et al. <sup>16</sup>	USA	Cross sectional	152 hearing parents (123 mothers, 18 fathers, 11 other family members) of CWHL	152 CWHL (79 boys, 73 girls; median 78.5, range 6–257 months)	Pediatric hearing-impaired caregiver experience	Developed and validated
Asberg et al. <sup>17</sup>	USA	Exploratory	35 parents (29 mothers, 6 fathers) of CWHL	35 CWHL (19 boys & 16 girls; 99.63 ± 42.7 months, range 31–198 months)	Parental stress index (PSI), multidimensional scale of perceived social support, inventory of socially supportive behaviors, satisfaction with life scale	Validated
Dogan <sup>18</sup>	Turkey	Casual comparative	460 parents, 230 CWHL, 230 children with normal hearing	230 CWHL (10.57 ± 4.17 years), Children with normal hearing (10.04 ± 3.23 years)	Stress self-assessment checklist, Beck depression inventory, trait anxiety inventory	Validated
Quittner et al. <sup>19</sup>	USA	Cross-sectional	181 parents of CWHL, 92 parents of children with normal hearing	181 CWHL (2.2 ± 1.2 years), 92 children with normal hearing (2.3 ± 1.1 years)	Parenting stress index-short form, family stress scale, child behavior checklist, observational measure of child negativity	Validated
Topol et al. <sup>20</sup>	USA	Prospective observational	27 mothers of CWHL, 79 mothers of children with normal hearing	27 CWHL (12 girls, 18 boys, 22.5 ± 2.5 months; 79 children with normal hearing (34 girls, 57 boys, 22.1 ± 2.2 months)	Parenting stress index (PSI), Child behavior checklist	Validated
Oghalai et al. <sup>21</sup>	USA	Retrospective	204 parents of CI	204 CWCI	Mullen scales of early learning, Vineland adaptive behavior scales, parental stress index, preschool language scale	Validated
Hashemi et al. <sup>22</sup>	Iran	Not mentioned	45 mothers of CWCI, 36 mothers of CWHA	5–8 years	Depression anxiety stress scale- 21	Validated

**Table 1** (Continued)

Study Id	Location	Study design	Details of the parents	Details of the children (gender, age)	Outcome measures	Validated/developed
Chen et al. <sup>23</sup>	China	Retrospective, cross-sectional case series	113 mothers of CWCI	113 CWCI (50 boys, 63 girls; 0–12 years)	Parenting stress index (Taiwanese)	Validated
Noor et al. <sup>24</sup>	Malaysia	Cross-sectional	62 parents (31 mothers 31 fathers) of CWHL	62 CWHL	Brief COPE scale	Validated
Plotkin et al. <sup>25</sup>	USA	Not mentioned	114 parents (74 mothers and 40 fathers) of CWHL	64 boys 50 girls; 5.90 ± 1.99 years	The family stress scale, NEO five-factor inventory, child behavior checklist	Validated
Sarant et al. <sup>26</sup>	Australia	Cross-sectional	70 parents (68 mothers 2 fathers) of CWCI	70 CWCI (34 girls, 36 boys; 6.6 ± 1.4 years)	Parenting stress index, Moller's family rating scale	Validated
Prakash et al. <sup>27</sup>	India	Not mentioned	50 mothers of CWHL	50 CWHL (5.3 years; range 4–7 years)	Parental stress index, Centre for Epidemiological Studies depression scale	Validated
Stika et al. <sup>28</sup>	USA	Prospective study	Parents of 28 children CWHL, parents of 42 children with normal hearing	28 CW mild to severe HL (12–18 months), 42 CW normal hearing of similar age	Mullen scales of early learning, preschool language scale, MacArthur-Bates communicative development inventory, infant-toddler social and emotional assessment, Vineland adaptive behavior scales, Parenting stress index-short form, maternal self-efficacy scale	Validated
Dirks et al. <sup>29</sup>	The Netherlands	Not mentioned	60 parents (30 CW moderate HL, 30 CW hearing)	30 CWHL (27.7 ± 5.6 months, 11 boys, 19 girls)	Nijmegen parenting stress index, Dutch non-speech test, infant-toddler social and emotional Assessment, multidimensional scale of perceived social support	Validated
Zaidman-Zait et al. <sup>30</sup>	Israel	Not mentioned	60 parents (30 mothers, 30 fathers) of CWHL. All 30 mothers and 27 of the fathers	30 CWHL (15 girls, 15 boys; 5.7 ± 1.63 years; range 3–8 years)	Family stress scale, parental acceptance questionnaire, early intervention parental self-	Validated

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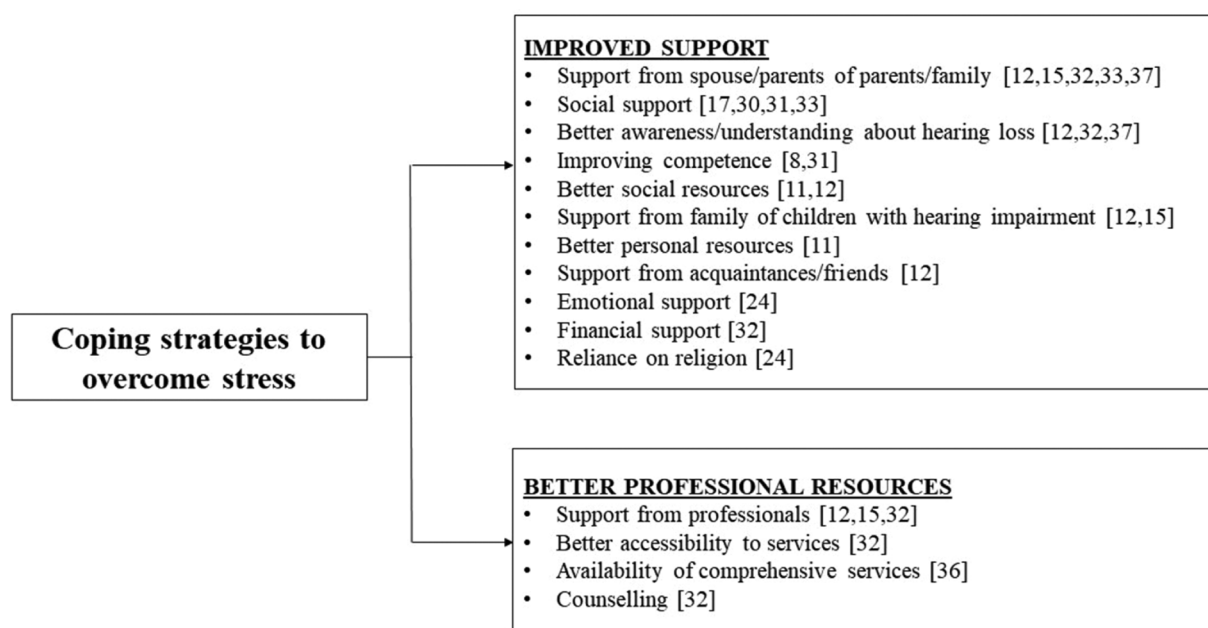
Table 1 (Continued)

Study Id	Location	Study design	Details of the parents	Details of the children (gender, age)	Outcome measures	Validated/developed
Zaidman-Zait et al. <sup>31</sup>	Israel	Not mentioned	60 parents (30 mothers, 30 fathers) of CWHL. All 30 mothers and 27 of the fathers had normal hearing; 3 fathers had HL.	30 CWHL (15 girls, 15 boys; 5.7 ± 1.63 years, range 3–7 years)	Parental involvement questionnaire, Impact of HL on family questionnaire, early intervention parental self-efficacy scale, support system questionnaire	Validated
Dev et al. <sup>32</sup>	India	Not mentioned	30 parents (24 mothers, 6 fathers) of CWCI	20 CWCI (138 ± 57 months, range 13 months to 22.2 years)	Service delivery, parental stress levels, reasons for delay in obtaining services, sources of emotional support, concerns, and fears	Developed non-standardized
Levinger et al. <sup>33</sup>	Israel	Not mentioned	84 parents (57 mothers, 11 fathers, 16 other family members) of CWHL	84 CWHL (8.33 ± 3.19 years, range 1–16 years)	Parenting stress index/short form; family crisis oriented personal evaluation scales; the family quality of life scale	Validated
Dammeyer et al. <sup>34</sup>	Denmark	Cross sectional	257 parents (220 mothers, 37 fathers) of CWHL	257 CWHL (118 girls, 139 boys, 8.8 ± 4 years)	Strength and difficulties questionnaire	Validated
<b>Study id</b>	<b>Location</b>	<b>Study design</b>	<b>Participants</b>		<b>Data collection measures</b>	
Anmyr et al. <sup>35</sup>	Sweden	Qualitative content analysis	12 parents of CWCI		Semi-structured interviews	
Park et al. <sup>36</sup>	Korea	Phenomenological	5 mothers CWHL		Semi-structured interviews	
Jean et al. <sup>37</sup>	Malaysia	Grounded theory approach	15 mothers of CWHL		Semi-structured interviews	

Abbreviations: CWHL, children with hearing loss; CWHA, children with hearing aids; CWCI, children with cochlear implants.

**Table 2** Factors associated with stress as reported by parents of children with hearing loss

<i>Parents/Family related factors</i>	
1	Low income <sup>9,15,19,23,32,37</sup>
2	Reduced quality of life at time of diagnosis and gradually improved <sup>10,13,16,23,32,35</sup>
3	Reduced family support/lack of family cohesion <sup>14,26,36</sup>
4	Reduced social support <sup>9,29,32,37</sup>
5	Socio-emotional concerns <sup>12,34</sup>
6	Lower acceptance by other family members and society <sup>30,37</sup>
7	Depression/anxiety among parents due to child having hearing loss <sup>22,27</sup>
8	Lower education <sup>14</sup>
9	Lack of time for oneself <sup>16</sup>
10	Lower self-competency <sup>30</sup>
11	Communication barrier with the child <sup>19</sup>
<i>Child related factors</i>	
1	Other handicaps along with hearing loss <sup>9,11,12,18,21,34</sup>
2	Reduced communicative ability of child/delayed language development <sup>12,13,15,17,19,26,28,29</sup>
3	Child's behavioral issues <sup>15,16,19,20,25,28,34</sup>
4	Academic concerns <sup>15,19,32</sup>
5	Future of child being accepted into the society <sup>16,32,37</sup>
6	Consequences of hearing loss <sup>8,19</sup>
7	Amplification device issues <sup>15,37</sup>
8	Higher age of identification <sup>16,23</sup>
9	Child's safety <sup>16,23</sup>
10	Child's gender <sup>23</sup>
<i>Professionals/service related</i>	
1	Lack of professional support <sup>36,37</sup>
2	Lack of services and advocacy <sup>15</sup>



**Fig. 2** Coping strategies to overcome stress associated with having a child with hearing impairment



**Table 3** Quality appraisal data

Study Id	4.1 Is the sampling strategy relevant to address the research question?	4.2 Is the sample representative of the target population?	4.3 Are the measurements appropriate?	4.4 Is the risk of nonresponse bias low?	4.5 Is the statistical analysis appropriate to answer the research question?
Lederberg <sup>8</sup>	Yes	Yes	Yes	Yes	Yes
Pipp-Siegel <sup>9</sup>	Yes	No	Yes	No	Yes
Spahn <sup>10</sup>	Yes	No	Yes	No	Yes
Hintermair <sup>11</sup>	Yes	Yes	Yes	No	Yes
Hintermair <sup>12</sup>	Yes	No	Yes	No	Yes
Burger et al. <sup>13</sup>	Yes	No	Yes	No	Yes
Weisel et al. <sup>14</sup>	Yes	No	Yes	No	Yes
Zaidman-Zait <sup>15</sup>	No	Can't tell	Yes	No	Yes
Meinzen et al. <sup>16</sup>	Yes	No	Yes	Yes	Yes
Asberg et al. <sup>17</sup>	Yes	No	Yes	No	Yes
Dogan <sup>18</sup>	No	Yes	Yes	No	Yes
Quittner et al. <sup>19</sup>	Yes	Yes	Yes	No	Yes
Topol et al. <sup>20</sup>	Yes	No	Yes	No	Yes
Oghalai et al. <sup>21</sup>	No	Yes	Yes	No	Yes
Hashemi et al. <sup>22</sup>	Yes	Yes	Yes	No	Yes
Chen et al. <sup>23</sup>	Yes	Can't tell	Yes	No	Yes
Noor et al. <sup>24</sup>	Yes	Yes	Yes	No	Yes
Plotkin et al. <sup>25</sup>	Yes	Yes	Yes	No	Yes
Sarant et al. <sup>26</sup>	Yes	No	Yes	No	Yes
Prakash et al. <sup>27</sup>	Yes	Yes	Yes	No	Yes
Stika et al. <sup>28</sup>	Yes	Can't tell	Yes	No	Yes
Dirks et al. <sup>29</sup>	Yes	Yes	Yes	No	Yes
Zaidman- Zait et al. <sup>30</sup>	No	No	Yes	No	Yes
Zaidman- Zait et al. <sup>31</sup>	No	No	Yes	No	Yes
Dev et al. <sup>32</sup>	No	No	Yes	No	Yes
Levinger et al. <sup>33</sup>	Yes	Can't tell	Yes	No	Yes

Table 3 (Continued)

Study Id	4.1 Is the sampling strategy relevant to address the research question?	4.2 Is the sample representative of the target population?	4.3 Are the measurements appropriate?	4.4 Is the risk of nonresponse bias low?	4.5 Is the statistical analysis appropriate to answer the research question?
Dammeyer et al. <sup>34</sup>	Yes	Yes	Yes	Yes	Yes
Study id	1.1 Is the qualitative approach appropriate to answer the research question?	1.2 Are the qualitative data collection methods adequate to address the research question?	1.3 Are the findings adequately derived from the data?	1.4 Is the interpretation of results sufficiently substantiated by data?	1.5 Is there coherence between qualitative data sources, collection, analysis, and interpretation?
Anmyr et al. <sup>35</sup>	Yes	Yes	Yes	Yes	Yes
Park et al. <sup>36</sup>	Yes	Yes	Yes	Yes	Yes
Jean et al. <sup>37</sup>	Yes	Yes	Yes	Yes	Yes

The next theme that led to stress among the parents of children with hearing loss was child-related factors. Among these, three factors were reported across six studies. These included the presence of other handicaps along with hearing loss,<sup>9,11,12,18,21,34</sup> the communicative ability of children or delayed language development due to hearing loss,<sup>12,13,15,17,19,26,28,29</sup> and, lastly, behavioral issues.<sup>15,16,19,20,25,28,34</sup> These factors are directly linked to the presence of hearing loss among the children leading to all these concerns. The next two factors were related to academic concerns<sup>15,19,32</sup> and concerns about the acceptance of the child into the society.<sup>16,32,37</sup> Parents have an expectation to make their child fit for a hearing society, and all of these factors can act as hurdles leading to increased stress. Two studies each identified factors linked with the identification and consequences of hearing loss.<sup>8,19</sup> These also included issues with amplification devices,<sup>15,37</sup> higher age of identification of hearing loss,<sup>16,23</sup> and child's safety.<sup>16,23</sup> These factors often lead to stress, especially in hearing parents as they might have never faced these situations in their lives and have no experience on how to handle them either. Lastly, the child's gender was also considered to be a factor associated with stress in a study.<sup>23</sup> This would be related to the gender stereotypes and specific roles expected from both genders. The last two factors were related to the lack of professional support,<sup>36,37</sup> services, and advocacy.<sup>15</sup> The parents often rely on professionals for support and help to overcome adverse situations, as they trust them to be knowledgeable. However, if these support systems are not available, then it could lead to increased stress levels among the parents. These findings are in agreement with those of a model that explains parental adjustments after the disclosure of the presence of a disability in their child.<sup>38</sup>

**Measures taken to overcome stress by parents of children with hearing loss**

Fifteen coping strategies adopted by parents to overcome stress were identified across the studies. These were thematically classified into two broad categories: improved support from different sources and better professional resources. The parents reported that they were able to cope better with stress if they received support from their spouse or parents or family.<sup>12,15,32,33,37</sup> These studies across different countries were indicative that a person turns to the immediate family in such a situation. The second most commonly reported support system was the social one.<sup>17,30,31,33</sup> Amidst the factors leading to stress among the parents of children with hearing loss, a common factor was related to stress associated with whether the society would accept the child with hearing loss. The opposite, that is, receiving support from the society, helped the parents to cope better. The next factors included better awareness/understanding about hearing loss,<sup>12,32,37</sup> better competence,<sup>8,31</sup> social resources,<sup>11,12</sup> and support from the families of other children with hearing impairment.<sup>12,15</sup> These coping strategies made the parents have a better grip and understanding over the situation and, thereby, helped in easing down the stress. The remaining factors

were related to support from other sources, such as personal resources,<sup>11</sup> acquaintances,<sup>12</sup> emotional,<sup>24</sup> financial,<sup>32</sup> and religious support.<sup>24</sup>

The remaining four strategies were classified under availability of better resources, with the most common one being support from professionals.<sup>12,15,32</sup> Parents need to rely on healthcare professionals and need to team up with them to provide better care for their child. Thus, the support from these professionals is considered a coping strategy for the parents. The other coping strategies included were better access to services,<sup>32</sup> comprehensive services,<sup>36</sup> and counselling.<sup>32</sup>

### Limitations and future directions

The studies in the present review spanned from 2002 to 2018, a period during which many changes have taken place in healthcare services. However, the findings and interpretations of the present review provide a holistic account of the different factors associated with stress and the coping strategies. Additional studies using a qualitative or mixed methods approach would help in having a better understanding of these stress factors and coping strategies.

### Final comments

The review enables a complete understanding of the factors leading to stress among the parents of children with hearing loss and how they cope with it. The awareness levels, availability of facilities, and socioeconomic status vary to a great extent across the different parts of the world. These findings are useful for planning better services and counselling strategies to reduce stress and improve coping among these parents.

### Summary points

- Stress is common among the parents of children with hearing loss.
- The present review highlights the stress among the parents of children with hearing loss as well as the ways in which they deal with this problem.
- The coping strategies identified within the review may facilitate better planning of support services for the parents of children with hearing loss.

#### Conflict of Interests

The authors have no conflict of interests to declare.

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