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# A content analysis of pediatric information in widely circulated newspapers in Iran

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## Abstract:

**BACKGROUND:** Newspapers play an important role in improving public health literacy. This study analysis the content of pediatric information in widely circulated Iranian newspapers in 2014.

**MATERIALS AND METHODS:** This is an applied survey performed using content analysis method. The data gathering tool was a checklist designed by the researcher. The sample size was determined using nonprobability sampling to be 426 articles with pediatric-related topics of five Iranian newspapers.

**RESULTS:** The results showed that the most popular topics included “psychological disorders” (19.6%) and “nutrition” (19.27%). The null areas include “physiopathology of body fluids and fluid therapy” and “gynecological problems in childhood” (0%).

**CONCLUSION:** The messages identified were more in line with needs of Iranian society which shows a need to pay more attention to international standards by both journalists and pediatricians.

## Keywords:

Content analysis, health information, pediatrics, widely circulated newspaper

## Introduction

Today, no one can deny the importance of information and its role in the development of societies. One of the important and noteworthy aspects of society that can also be considered to be one of the criteria for social development is the development of health literacy. General populace receives its health-related information from mass media.<sup>[1]</sup> Using these media, outlets play an important role in transfer of information and improving society’s knowledge and attitude and can also play an important role in controlling the prevalence of diseases in society.<sup>[2]</sup> Today’s society that despite increased importance of electronic media have managed to stay as strong as ever in printed press role in informing the populace.<sup>[3]</sup>

Due to their ease of access and transportation, cheap price and possibility of use at any time and place, longer history, and function as historical documents, these printed newspapers have retained their place among general populace.<sup>[4]</sup> One of the topics that from time to time appears on the pages of newspapers and is popular among people, especially with mothers, is pediatric information. Pediatric information concentrates on medical and health care and information for infants, children, and teenagers from birth to 18 years of age.<sup>[5]</sup> Economic, social, and cultural development of every society depends on its human development which depends on physical, mental, and social health of member of the society. In this regard, childhood is the most important and influential period in providing, maintaining, and improving health situation in societies that can ensure future social development.<sup>[6]</sup>

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Various studies in Iran and other countries concentrate on the content analysis of health information in mass media. In Iran, the most important studies in this area are the studies by Taghdisi *et al.* on health-related articles of the most widely circulated newspapers in Iran,<sup>[7]</sup> Amini *et al.* on influence of TV food commercials on children,<sup>[8]</sup> Mohammadpour Ahranjani *et al.* on nutritional messages in Iranian press,<sup>[9]</sup> Malek Afzali *et al.* on publication of health research results in Iranian newspapers,<sup>[10]</sup> Nasrollahzadeh and Shahbazar on scientific medical information in Iranian newspapers,<sup>[11]</sup> and Hovsepyan *et al.* on content analysis of cancer-related nutritional messages in Iranian popular magazines.<sup>[12]</sup> Important studies in other countries include studies by Prabhu *et al.* on prime-time pediatric television medical news,<sup>[13]</sup> Pruitt and Mullen on inaccurate descriptions of emergency contraception in newspaper articles,<sup>[14]</sup> Salzman on content analysis of nutrition coverage on the today show program,<sup>[15]</sup> Mahshwar and Rao on nutrition science coverage by popular Indian daily newspapers,<sup>[16]</sup> and Ashorkhani *et al.* on quality of health news disseminated in the print media in developing countries.<sup>[1]</sup>

Investigating the previous literature showed that various studies have been conducted on content analysis of medical and health-related information on electronic and printed media in Iran and other countries, and among various media, newspapers have been one of the favorite forms of media in these studies.<sup>[1,7,9-11,14,16]</sup> However, there are no content analysis studies on pediatric health information in Iran. Given the fact that most people use public publications, mass media, and internet to obtain their health-related information<sup>[17,18]</sup> and given the importance of health information, especially pediatric health information, this study aims to perform a content analysis on the pediatric health information published in widely circulated Iranian newspapers, the most important published messages, the topic trends of the message have been published and empty topic areas. The results of this study can help identify the strengths and weaknesses of pediatric health information in Iranian newspapers and therefore can be used to improve the quality of published pediatric information.

## Materials and Methods

This applied type study was carried out using content analysis method. The statistical population consisted of all messages in 694 issues of five Iranian widely circulated newspapers between March and September 2014 which were selected after applying the inclusion criteria of having national coverage, having a general focus, having an electronic format, and having medical and pediatric information. Exclusion criteria included

lack of access to the newspaper during the study. These selected newspapers were Ettelaat, Iran, Jam-e-Jam, Resalat, and Kayhan newspapers. The sample size was determined using nonrandom purposeful sampling, and 426 pediatric-related articles were extracted from these newspapers. It is worth mentioning that it was possible to extract more than one message from an article.

Data gathering tool was a checklist designed by the researcher whose components were selected based on research goals and included (a) newspaper characteristics, (b) message content, and (c) topic orientation of the message passed on pediatrics curriculum.<sup>[6]</sup> During the study, messages related to pediatric health were extracted from newspapers using content analysis, and there were coded and entered into the checklist. Then, the data were entered into MS Excel software, and descriptive statistics such as frequency and percentage were used to analyze the data.

## Results

From a total of 694 issues of investigated newspapers, 426 articles (3019 messages) related to pediatrics were extracted. Each newspaper contribution to this total includes Jam-e-Jam: 216 articles (50.7%), Ettelaat: 113 articles (26.5%), Iran: 77 articles (18%), Kayhan: 15 articles (3.5%), and Resalat: 5 articles (1.17%).

Table 1 shows the topics of pediatric-related messages in the newspapers. The 31 clusters of this table and their order are based on “curriculum and criteria of pediatrics.”<sup>[6]</sup> As can be seen in the table, “psychological disorder” cluster with frequency of 19.60% and “nutrition” cluster with frequency of 19.27% have the highest number of messages.

Figure 1 shows the results of Table 1 with more clarity and from highest to the lowest frequency. As mentioned before, the topics with most attention in the newspapers were “psychological disorders” and

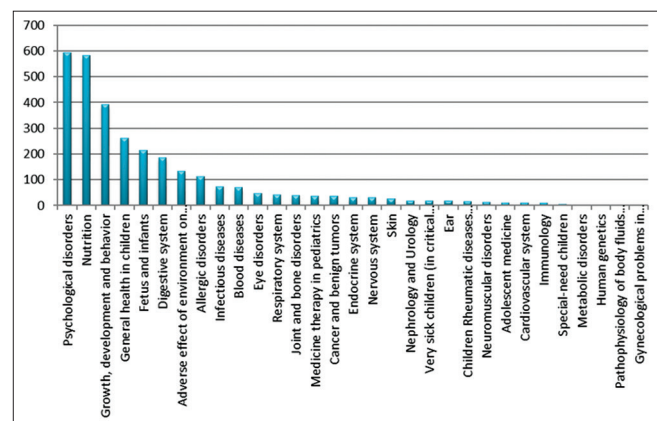


Figure 1: Frequency of pediatrics-related messages in newspapers based on topic

**Table 1: The topic orientation of pediatric-related information in the investigated newspapers**

Number	Subject cluster	Subcategories	Total cluster frequency (%)	Rank
1	Growth, development and behavior	Infants, 1 <sup>st</sup> year, 2 <sup>nd</sup> year, preschool years, beginning of childhood, teenagers, sexual behaviors, growth evaluation, development classification, childcare, divorce, lose and privation, sleep medicine	391 (12.95)	3
2	Psychological disorders	Evaluation and interview, psychotherapy in children and teenagers, psychosomatic disorders, vegetative disorders, tic and habit disorders, anxiety disorders, behavior disorder, suicide and attempted suicide, eating disorders, disruptive behavior disorder, extended developmental and psychosis disorders in childhood, development pattern and elementary school performance, ADHD, special language and learning disorders	592 (19.60)	1
3	Special need children	Adoption, care of adopted children, effects of violence on children, child neglect and exploitation, FTT, psychological disorders and chronic diseases, organ transplant, palliative care in pediatric medicine, care for children with life-span limiting diseases	6 (0.19)	24
4	Nutrition	Nutritional needs, infant and child nutrition, food insecurity, hunger and nutritional deficiency, extra weight and obesity, low or excess Vitamin A intake, low or excess Vitamin B intake, Vitamin C, rickets and hypervitaminosis D, lack of Vitamin E, lack of Vitamin K, lack of minerals and micronutrients	582 (19.27)	2
5	Pathophysiology of body fluids and fluid therapy	Electrical and acid-base disorders, preservative and replacement therapy, deficiency treatment, water and electrolyte therapy in special disorders	0	27
6	Medicine therapy in pediatrics	Pharmacogenetics, pharmacogenomics and proteomics clinical pharmacology, basics of medicine therapy, poisoning, herbal medicine	36 (1.19)	14
7	Very sick children (in critical condition)	Evolution of sick children in clinic and office, damage control, emergency medical care for children, referral of critically sick children between medical care units, survey techniques in critically sick infants and children, ranking system and predictors of mortality, children emergency and resuscitation, neurological and stabilizing emergency wards, respiratory failure and distress, mechanical ventilation, critical care in victims with multiple problems, nutritional stability, drowning and related damages, burning damages, cold-based damages, unconsciousness and preoperational care, pain management in children	17 (0.56)	19
8	Human genetics	Genetic approach in pediatrics, human genome, genetic transfer patterns, cytogenetics, genetics of common disorders, integration of genetics in pediatrics	1 (0.03)	26
9	Metabolic diseases	Approach toward congenital metabolic diseases, amino acids metabolism disorder, disorders of lipid metabolism, disorders of carbohydrate metabolism, mucopolysaccharidosis, purine and pyrimidine metabolic diseases, progeria, hypoglycemia	2 (0.06)	25
10	Fetus and infants	Infant mortality overview, dangerous pregnancies, fetus, infants at high risk, clinical symptoms of diseases in infancy, neurological disorders, delivery room emergencies, respiratory disorders, gastrointestinal disorders, blood disorders, genitourinary system disorders, umbilicus disorders, metabolic diseases, endocrine system disorders, dysmorphology, neonatal infections	214 (7.08)	5
11	Adolescent medicine	Adolescent health epidemiology, health care for adolescents, violent behavior, drug abuse, breast and menstrual problems, contraception, teenage pregnancies, teen sexual assault, sexually transmitted diseases, chronic fatigue syndrome	11 (0.36)	22
12	Immunology	Immune system evaluation, T, B and natural killer cell systems, phagocytosis system, complement system, stem cell transplant, hematopoietic	9 (0.29)	23
13	Allergic disorders	Allergy and immunology, atopic disorders, diagnosis of allergic disorders, treatment of allergic disorders, allergic rhinitis, childhood asthma, atopic dermatitis, insect bite allergies, eye allergies, hives and angioedema, anaphylaxis, serum sickness, allergic reaction to foods, allergy to medicines	112 (3.70)	8

Contd...

Table 1: Contd...

Number	Subject cluster	Subcategories	Total cluster frequency (%)	Rank
14	Children rheumatic diseases (connective tissue and collagen vascular diseases)	Evaluating children suspected of rheumatoid arthritis, treatment of rheumatic diseases, rheumatoid arthritis of adolescents, ankylosing spondylitis and other spondylosis arthropathy, reactive arthritis, systematic lupus erythematosus, adolescents' dermatomyositis, scleroderma and Raynaud's phenomenon, Behcet's disease, Sjögren's syndrome, hereditary periodic fever syndrome, myeloidosis, sarcoidosis, kawasaki disease, vasculitis syndrome, musculoskeletal pain syndrome, different conditions with rheumatic	16 (0.52)	20
15	Infectious diseases	General considerations, preventive actions, antibiotic treatment, Gram-positive infections, Gram-negative infections, anaerobic infections, mycobacterial infections., spirochetal infections, mycoplasma infections, chlamydia infections, rickettsia infections, fungal infections, viral infections, anti parasitic treatment, protozoan diseases, worm disease	74 (2.45)	9
16	Digestive system	Clinical symptoms of gastrointestinal, oral cavity, esophagus, stomach and intestine diseases, exocrine pancreas, liver and biliary system, peritoneum	185 (6.12)	6
17	Respiratory system	Development and performance, diagnostic approach in respiratory diseases, respiratory tract disorders including: congenital and acquired disorders in nose, nasal polyps, common cold, sinusitis, acute pharyngitis, abscess around the throat tonsils and adenoids, recurrent or chronic respiratory symptoms, acute inflammation and obstruction of upper respiratory tract, congenital anomalies of the larynx, trachea and bronchi, wheezing, bronchitis and bronchiolitis, emphysema and hyperinflation, alpha-1 antitrypsin deficiency, congenital disorders of the lungs, pulmonary edema, aspiration syndromes, bronchiectasis pneumonia, lung abscess, CF, atelectasis, lung tumors, pleurisy, pleural effusion and empyema, interstitial lung disease, pulmonary hemosiderosis, embolism, pulmonary infarction and hemorrhage, pneumothorax, pneumomediastinum, hemothorax, chylothorax	42 (1.39)	12
18	Cardiovascular system	Developmental biology of cardiovascular system, evaluation of cardiovascular system, congenital heart diseases, cardiac arrhythmia, acquired heart disease, myocardial and pericardial diseases, interventional cardiology, peripheral vascular system disorders	11 (0.36)	22
19	Blood diseases	Hematopoietic system, anemia caused by insufficient production, hemolytic anemia, polycythemia, pancytopenia, transfusion of blood components, blood coagulation disorders and bleeding, spleen, lymphatic system	70 (2.31)	10
20	Cancer and benign tumors	Childhood cancer epidemiology, molecular and cellular biology of cancer, principles of diagnosis, treatment principles, leukemia, lymphoma, childhood brain tumors, neuroblastoma, renal carcinoma, soft tissue sarcoma, bone neoplasms, retinoblastoma, gonads and germ cells neoplasms, liver neoplasms, benign vascular tumors, histiocytosis syndromes and rare tumors	35 (1.15)	15
21	Nephrology and urology	Glomerular disease, states which are specifically associated with hematuria, tubular diseases, toxic nephropathy and renal failure, urinary tract disorders in infants and children	18 (0.59)	18
22	Gynecological problems in childhood	-	0	27
23	Endocrine system	Hypothalamic and pituitary disorders, disorders of the thyroid gland, parathyroid gland disorders, disorders of the adrenal, gonadal disorders, diabetes mellitus in children	30 (0.99)	16
24	Nervous system	Neurological evaluation, congenital anomalies of the central nervous system, convulsions in children, mimic scenario seizures, neurocutaneous syndrome, movement disorders, encephalopathy, neurodegenerative disorders, CNS demyelination disorders, acute attack syndrome, CNS infections, brain abscess, pseudotumor brain, spinal cord disorders	30 (0.99)	16

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**Table 1: Contd...**

Number	Subject cluster	Subcategories	Total cluster frequency (%)	Rank
25	Neuromuscular disorders	Review and evaluation, psychological disorders of muscles, muscular dystrophy, endocrine and toxic myopathies, metabolic myopathies, neuromuscular transmission and motor neurons disorders, hereditary sensory-motor neuropathies, toxic neuropathies, autonomic neuropathies, Guillain-Barre syndrome, Bell's palsy	13 (0.43)	21
26	Eye disorders	-	46 (1.52)	11
27	Ear	-	17 (0.56)	19
28	Skin	Toxic necrolysis, Staphylococcal scalded skin syndrome, epidermolysis bullosa, skin infections, cutaneous drug reactions, erythema nodosum, erythematous fever and rash, eczema and seborrheic dermatitis	26 (0.86)	17
29	Joint and bone disorders	Orthopedic problems, sports medicine, skeletal dysplasia, metabolic bone diseases	39 (1.29)	13
30	Adverse effect of environment on health	-	134 (4.43)	7
31	General health in children	Social factors affecting health, health improvement plans, classification and surveillance, general health and epidemiology, accidents and trauma, physiotherapy, immunizations	260 (4.61)	4

ADHD = Attention deficit hyperactivity disorder, CNS = Central nervous system, CF = Cystic fibrosis, FTT = Failure to thrive

"nutrition," followed by "growth, development, and behavior" and some topics such as "physiopathology of body fluid and fluid therapy" and "gynecological problems in childhood" have not been mentioned and topics such as "human genetics," "metabolic diseases," and "special-needs children" had received very limited attention.

To identify the most important messages in the investigated newspapers, a data refinement stage was conducted. In the first stage, the subject clusters with a frequency of 200 or higher were selected from among 31 total clusters. These clusters include (1) psychological disorders, (2) nutrition, (3) growth, development, and behavior, (4) general health in children, and (5) fetus and infants and in the next stage, messages with the most frequency were determined in each cluster. Table 2 shows that in each important cluster, only three messages had a frequency higher than the threshold. For example, in the first cluster (psychological disorders), messages related to "anxiety disorder," "extensive development disorders," and "attention deficit hyperactivity disorder" were the first three frequent topics.

Finally, in the third stage, the most prominent topic in each cluster was investigated [Table 2], and the most important messages highlighted in the Iranian newspapers were identified [Table 3].

## Discussion

The results of the current study showed that among the investigated newspapers, Jam-e-Jam newspaper had published more than half of all articles related

**Table 2: Messages with most frequency in most frequent clusters**

Rank	Subject cluster	Messages with most frequency	Frequency (%)
1	Psychological disorders	Anxiety disorders	179 (30.23)
		Extensive development disorders	158 (26.68)
		ADHD	147 (24.83)
		Other	108 (18.24)
		Total	592 (100)
2	Nutrition	Milk usage	464 (79.72)
		Extra weight and obesity	51 (8.76)
		Rickets and hypervitaminosis D	20 (3.43)
		Other	47 (8.07)
		Total	582 (100)
3	Growth, development and behavior	Educational issues	128 (32.73)
		Growth	67 (17.13)
		Sleep in children	45 (11.50)
		Other	151 (38.61)
		Total	391 (100)
4	General health in children	Oral cavity health	50 (19.23)
		Single children	47 (18.07)
		Media	34 (13.07)
		Other	129 (49.61)
		Total	260 (100)
5	Fetus and infants	Pregnancy care	140 (65.42)
		Infant care	36 (16.82)
		Premature infants	26 (12.14)
		Other	12 (5.60)
		Total	214 (100)

ADHD = Attention deficit hyperactivity disorder

to pediatrics. These findings are similar to the results reported by Nasrollahzadeh and Shahbazztabar<sup>[11]</sup> that showed Jam-e-Jam newspaper having the highest amount of medical information.

**Table 3: Most important topics in pediatrics in widely circulated Iranian newspapers**

Number	Main cluster	Subtopic	Highlighted message
1	Psychological disorders	Anxiety disorder	Anxiety in children - family (as the cause)
2	Nutrition	Using milk	Not using milk - developmental disorder in children
3	Growth, development and behavior	Violence in children	Anger management - teaching it to children
4	General health in children	Oral cavity health	Diarrhea - lack of relation with teething
5	Fetus and infants	Pregnancy care	Using junk food - premature birth

The results show that the investigated newspapers had published several articles about pediatrics and one can say that this topic is popular among newspapers. These results are different from results of the study by Taghdisi *et al.*<sup>[7]</sup> who reported a lack of interest in medical information in Iranian newspapers but are similar to the results reported by Malek Afzali *et al.*<sup>[10]</sup> who reported that widely circulated newspapers publish medical information in more than 50% of situations.

In the current study, the most frequent messages were about “psychological disorders,” “nutrition,” “growth, development, and behavior,” “general health in children,” and “fetus and infants” which is similar to the results by Nasrollahzadeh and Shahbaztabar<sup>[11]</sup> who reported nutrition and psychology to be among the most frequent topics in newspapers. The results are also similar to that of the study by Amini *et al.*<sup>[8]</sup> who reported that components of food products have the most frequency in TV advertisements. Findings by Prabhu *et al.*<sup>[13]</sup> and Salzman<sup>[15]</sup> also showed that medical information in television was mostly focused on nutritional messages.

The results showed that the least frequent topics were “physiopathology of body fluid and fluid therapy,” “gynecological problems in childhood,” “human genetics,” and “metabolic diseases” which is different from the results reported by Mohammadpour Ahranjani *et al.*<sup>[9]</sup> that showed nutritional-related messages having the least amount of frequency. However, these results are similar to the results reported by Vedadhir *et al.*<sup>[19]</sup> that showed a lack of attention to women’s health in magazines. Investigating the scientific articles indexed in “PubMed” database which is the most credible database in the medical fields<sup>[20]</sup> showed that between 2011 and 2016, there has been 437 articles on “human genetics”<sup>[21]</sup> and 23,554 articles on “metabolic diseases”<sup>[22]</sup> which show that despite a great amount of scientific production worldwide in these fields, these two topics have been neglected in Iranian newspapers. On the other hand, topic of “physiopathology of body fluid and fluid therapy” had no indexed articles between 2011 and 2016 in “PubMed” database<sup>[23]</sup> which shows a general lack of attention to this topic among researchers, perhaps due to the novelty of the field.

Five highlighted messages in Iranian newspapers were “anxiety in children-family (as the cause),” “not using milk-developmental disorder in children,” “anger management-teaching it to children,” “diarrhea-lack of relation with teething,” and “using junk food-premature birth” which should be investigated with regard to their accuracy and citation.

Topics such as psychological health, proper nutritional behavior, growth and development problems in children, and general health of fetus, infant, and children are among the important topics for societies and many parents use mass media to gain information on these topics. In this regard, newspapers as one of the most influential forms of media can play an important role in improving the knowledge, attitude, and health in families and society, especially when it comes to children. By publishing accurate scientific facts on pediatrics, newspapers can improve the knowledge of parents and families which leads to improving the health status of the society. Investigating the performance of newspapers in this regard showed that Iranian newspapers had paid adequate attention to pediatrics, but this attention suffers from an asymmetry in topic distribution. In other words, some topics such as “psychological disorders” and “nutrition” were mentioned with high frequency while topics such as “physiopathology of body fluid and fluid therapy” and “gynecological problems in childhood” were not mentioned at all. This shows that the information in Iranian newspapers is more in line with needs of Iranian society than the international needs because the most frequent topics in the results of the current study [Table 2] also appear among the research priorities of Iranian medical science universities and research centers,<sup>[24-27]</sup> whereas studies on child mortality show that topics such as congenital disorders, trauma (road accidents, burning,...), noncommunicable diseases (chronic respiratory disorders and acquired heart diseases) and cancers in childhood, diabetes, and obesity were the research priorities in pediatric health at an international level.<sup>[28]</sup>

Finally, this study aimed to provide an overview of articles on pediatrics published in Iranian newspapers to gain the attention of journalists and physicians alike. Due to the asymmetry in topics covered by newspapers on pediatrics, it can be suggested that pediatricians should cooperate with journalists in widely circulated newspapers,

especially in neglected topic areas, to improve the knowledge of parents and society on these topics.

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### Conflicts of interest

There are no conflicts of interest.

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