



International Journal of Home Science

ISSN: 2395-7476
IJHS 2020; 6(1): 281-284
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www.homesciencejournal.com
Received: 19-11-2019
Accepted: 22-12-2019

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Facts about commercial baby food products and major health concerns

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Abstract

Every child deserves a healthy start to life, good nutrition and healthy diets in the first two years of life set the foundation for optimal growth, development and well-being of child throughout the life. To ensure healthy growth and development of infants from about 6 to 23 months of age need to complement breast milk with solid foods that are more nutrient-dense and prepared more frequently during the day than the family diet. As per census 2011 India is the second most populous country in the world where 13.12 percent of her population lies in the tender age bracket i.e 0-6 years. However, due to the increasing number of working women and the increasing parental concerns about nutrition have lead to introduction of commercial baby food. These professionally made food designed to meet the nutrition requirements of babies also address the problems of scarcity of time for preparing baby food at home. These packed and bottled baby food is also considered as a supplement to mother's feeding. The baby food market in India is witnessing rapid growth and is growing by 10-12% a year. However, these commercial baby food contains many toxic hazardous chemicals such as semi-carbazide (SEM), BPA, 2-bis(4-hydroxyphenyl) propane etc. These chemicals can accumulate in certain organs, such as the liver, heart and lymph nodes and may cause them to become damaged or diseased.

Keywords: commercial baby food, nutrition, growth, baby food product market etc.

Introduction

Adequate nutrition care during early stage of life is a fundamental pillar of human life, health and development across the entire life span. Since from the earliest stages of fetal development, at birth, through infancy, childhood, adolescence, and on into adulthood and old age, proper food and good nutrition are essential for survival, physical growth, mental development, performance and productivity, health and well-being. It is well recognized that the period from birth to two years of age is a critical window for the promotion of optimal growth, health and behavioral development. Many research studies have showed that this is the peak age for growth faltering, deficiencies of certain micronutrients and common childhood illness such as diarrhea. After child reaches 2 years of age, it is very difficult to reverse stunting that occurred earlier. An appropriate diet is critical in the growth and development of children especially in the first two years of life (Aggarwal *et al.*, 2008) ^[1]. The World Health Organization (WHO) has defined certain indicators to effectively assess infant and young child feeding practices. They are: early initiation of breastfeeding, exclusive breastfeeding under six months of age, continued breastfeeding at one year and at two years (WHO, 2007) ^[23]. The health outcomes of a child are directly proportional to their feeding practices, which are, in turn, dependent on the knowledge and practices of the mother. The first two years of a child's life are crucial to ensure appropriate growth and development. Malnutrition during this period results in a series of problems, beginning with reduced weight for age and stunting, progressing to the inability to achieve potential height in adulthood, and reduced capacity for physical work, which ultimately has implications for national development (WHO, 2009) ^[24]. Improper feeding practices have also been linked to reduced reproductive capacity, complicated deliveries, and increased incidence of low birth weight infants in women who were malnourished as children (Martin *et al.*, 2004) ^[11]. However, breastfeeding rates continue to be low worldwide, especially in high-income countries, where just one in five infants is breastfed.

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- Infants and young children are at an increased risk of malnutrition from six months of age onwards, when breast milk alone is no longer sufficient to meet all their nutritional requirements and complementary feeding should be started. Initiating complementary feeds too early or too late can lead to malnutrition (Aggarwal *et al.*, 2008) ^[1]. The early introduction of complementary feeds before the age of six months can lead to displacement of breast milk and increased risk of infections such as diarrhoea, which further contributes to weight loss and malnutrition. Besides this, it is thought that babies are also not physiologically ready to receive complementary feeds under six months due to immaturity of the gastrointestinal and neuro developmental systems and the kidneys. Many Studies have showed that early introduction of complementary feeds does not result in improved growth velocities or food (Cohen *et al.*, 1995) ^[5]
- Predictors of breastfeeding and weaning practices vary between and within countries. Urban or rural difference, age, breast problems, societal barriers, insufficient support from family, knowledge about good breastfeeding practices, mode of delivery, health system practices, and community beliefs have all been found to influence breastfeeding in different areas of developing countries (Nkala and Musya, 2011) ^[19] The transition from exclusive breast feeding to semisolid food is a very vulnerable period because it is the time when malnutrition starts in many infants, contributing significantly to the high prevalence of malnutrition and infection in children under five years of age worldwide (Ruth, *et al.*, 2005) ^[17].
- India is a kaleidoscope of various cultures and traditions a lot of the customs and practice have effect over health including infant feeding practices. An infant's first bite of solid food is ceremonial and holds religious importance in many cultures. For instance an 'annaprashan', a Hindu ritual where the infant is fed sweetened rice porridge, usually blessed, by an elder family member. Socio cultural factors and traditional practices influence the practice of introducing early complementary feeding (Aggarwal *et al.*, 2008) ^[1]. Caregivers lack the knowledge about appropriate complementary feeding and foods (quality and quantity). Low income and poor household food security are important factors in nutritional outcomes of infants and young children.
- World Health Organization, UNICEF and many national health agencies have recommended that the infant should be exclusively breastfed for the first six months of life to achieve optimal growth, development and health. Studies have shown that breastfed babies are less likely to suffer from serious illnesses, including gastroenteritis, asthma, eczema and respiratory and ear infections. Adults who were breastfed as babies are less likely to develop risk factors for diseases such as obesity and high blood pressure (Lancet, 2016) ^[20]

Commercialization of Early Years

Every parent wants to make their baby very strong and healthy and for this they always try to give their baby, nutritious food. Beside of that Joint family pattern is transforming into nuclear family structure, the grandmother's care has reduced considerably. Also due to lack of time, they cannot always give their baby home prepared food. Parents are in search of readymade food for the baby without much

annoyance. Hence, they purchase different types of baby food, which are available in the market to fulfill these requirements of baby food. Baby food is any soft, easily consumed food, other than breast milk or infant formula that is made specifically for infants, roughly between the ages of four to six months and two years. The food comes in multiple varieties and tastes and it may be table food that the rest of the family is eating which has been mashed or otherwise broken down, or it can be purchased ready-made from the market. Baby food varies from culture to culture. Availability of ready to eat food is replacing fresh homemade foods. In many cultures, pastes of grain and liquids are the first baby food. Babies are fed food pre-masticated by the caretaker of the baby in order to pulverize the food and start the digestion process. During the period between 2007-12, sales of baby foods has been increased by nearly 80 percent. The market is driven by more working women, a young population, rising incomes, an expanding food retail sector and steady urbanization. All of these factors are coming together to change baby food purchase patterns with an emphasis on quality, convenience and food safety. The Indian market is particularly attractive because of the country's robust birth rate. (Mishra, 2015) ^[13]. Home-cooked meals are likely to be supplemented with packaged baby food as more women take on full-time jobs and purchasing power increases. Categories of baby food are increasing as parents are willing to invest in higher value products. The baby food industry developed a large market for the "infant formula" as an alternative to breastfeeding. This led to proliferation of formula feeding which was further supported by the health systems. As a result of fast-paced modern lifestyles, consumers continue to seek convenience and simplicity. At the same time, consumers with children are more confident and demanding about what they purchase. They are also demanding that companies communicate with them openly in regards to their baby food products. The rise in India's baby food market is also part of a broader trend of consumers around the world becoming increasingly aware of the importance of baby foods in augmenting the nutrient requirements of babies and toddlers. In this context, parents are seeking to feed their children products that enhance their development throughout the early stages of life.

India is home to more than 79 million children aged three and under, and the baby food industry is growing rapidly, at the rate of 10–12% per year.

As per NFHS-4 2015-16 only 54.9% of infants were exclusively breastfed in their first six months. The consequences of increasing reliance on formula and commercial baby foods are manifold—from more cases of tooth decay in babies, to a correlation with lower intake of fruit and vegetables in school-age children, to childhood obesity. As per global nutrition Report 2017 it was found that in India only one out of 10 babies between the ages of 6-23 months gets the minimum acceptable diet.

“Earlier the baby food market was limited to basic baby milk and food products, which is now extracted to new flavours and variants along with convenient packaging. Infant milk formula based baby food products is a large segment in baby food market, followed by baby cereal products, baby food forms the largest segment and account for 50.52 percent of the total retail sales of baby food and formula market. India's baby food market is estimated to cross USD 520 million in 2014 (Centre for Consumer Studies, Indian Institute of Public Administration, 2015). Milk based baby food segment is the leading contributor, followed by dried baby food and others segment. Southern region is the largest revenue contributor in

the country's baby food market, followed by Northern region, due to the presence of well established distribution networks in these regions. Eastern region accounts for the lowest demand due to low per capita income and comparatively weaker distribution channels of the companies in this region.

Commercial BABY FOOD: Scenario in Indian market

Gujarat Cooperative Milk Marketing Federation (GCMMF) Amul, Nestle India Ltd, Nutricia International Pvt Ltd, Raptakos Brett & Co Ltd, Abbott Nutrition, Mead Johnson Nutrition (India) Pvt Ltd. The Nestle, Wockhardt's Farex and Heinz Breakfast Creamy Oat Porridge Cereal are the top three popular brands in India in baby food market. The company continued to influence the popularity of its leading brands including Lactogen, Cerelac, Nan, Nestrum and Nestrogen. Furthermore, a growing trend of merger and acquisitions has been witnessed in the Indian Food industry over last few years. Nestlé's acquisition of Gerber Food and Pfizer Nutrition are among some of the prime example leading to increasing market consolidation and thus intensifying the competition in the market. Thus most of the top Baby Food brands in India are known for providing the right amount of nutrition to babies. Prescribed by these baby food products are generally prescribed by most of the famous pediatricians to the child after completion of their 6 months. Baby foods produced by the top brands in this segment contain the right nutritional content required by the baby and are also easily digestible by him/her. Baby food industry consists of companies that manufacture packaged foods for babies; it is ready to eat and readymade and categorized into three main types; thick liquid, thicker liquid and solid foods for their right age. There are different types in which baby food is packaged; different types of containers to different food types, such as baby snacks, bottled baby food, canned baby food, cereals, fruits and vegetables, and meat. However, the milk based baby food segment is expected to continue to dominate the Indian baby food market as it is considered to be the most convenient alternative to mother's milk. Milks dominate the market and have outperformed cereals in volume terms. Moreover, Bottled baby food too seems to be one of the leading segments in baby food market. With increasing demand in organic farming and organic foods, organic baby food production is also on rise. As the number of working women is increasing, demand for packaged baby food is witnessing a rapid growth with concern about nutritional benefits that baby food products offer. Due to its advantage in terms of storage for longer duration, convenience and time taken as opposed to homemade foods, baby food market is thriving with success in demand.

Major Contaminants of Commercial Baby Food

Aside from the poor quality and uniform taste, when parents use commercial baby food, they're also giving their baby a varied diet of contaminants. Environmental Working Group (EWG) in the year 2019 tested 190 samples of commercial baby food and these samples tested positive for five pesticides, among them, the most common ones, organophosphate methamidiphos and organophosphate acephate was found in 9.4 percent and 7.8 percent of the samples respectively.

Other research has shown that feeding babies twice a day on commercial baby foods such as rice porridge can increase their exposure to arsenic by up to 50 times. In the same study, exposure to other toxic metals such as cadmium which is known to cause neurological and kidney damage increased by

up to 150 times while exposure to lead increased by up to eight times.

The products labelled "Baby Ready Meals" are frozen or chilled processed meals that just need to be reheated. One of the many problems with these is that they consistently contain heat-induced contaminant 'furan', a toxic compound linked to cancer. Many commercial baby foods, particularly jarred varieties, contain benzene, a colourless, flammable liquid with a sweet odour. It is also a natural part of crude oil, gasoline and cigarette smoke. Benzene is known to cause cancer, based on evidence from studies in both people and laboratory animals. The link between benzene and cancer has largely focused on leukaemia and cancers of other blood cells (American Cancer Society 2013). Many of the most popular brands contain less than a fifth of a baby's recommended daily supply of calcium, magnesium, zinc, iron and other crucial minerals (University of Greenwich 2012). In one study, the highest levels were found in jarred baby foods containing carrots and carrot juices specifically intended for infants. In contrast, freshly home-prepared carrot juices and baby foods are all benzene-free.

All types of processed baby food, whether jarred, frozen or pouched, have a significantly contaminated with Fumonisin-a toxin linked to esophageal cancer, Cadmium- an extremely toxic metal and noxious animal DNA which has been linked to diabetes and various types of cancer. The latest cancer-causing chemical to join the group is Acrylamide-a toxic chemical compound that has been found in commercial baby foods, cereals and potato chips.

Packaging and Health Concern

The growing popularity of baby foods raises concern about the safety issues of their consumption. The organic pollutant BPA,2-bis(4-hydroxyphenyl)propane] is a monomer and raw material in epoxy resins which is widely used as food contact coating materials. The presence of BPA into food may be sourced from leachable plastic food packages, water and environment. (Mikołajewska *et al.*, 2015) ^[12]. BPA contamination through environmental may occur during production, processing, use or via physical and chemical degradation of end products during disposal of BPA containing substances (products or articles) or recycling operations. BPA has recently received considerable attention worldwide from both scientists and regulatory authorities due its recognized endocrine disrupting properties (Rubin, 2011) ^[16]. Aside from the waste element, the packaging of commercial baby food has been found to be dangerous in itself. For instance, several studies have found the lids of baby food jars contain the hormone disrupter Bisphenol-A (BPA) which has been linked to infertility and cancer, even at extremely low levels of exposure. BPA leaches from the baby food containers into their contents.

Commercial baby food packaging is also responsible for exposing babies to a carcinogenic toxin called semi-carbazide (SEM). The toxin, which has been linked to cancer in animals gets into the baby food through the plastic gaskets used to seal glass jars with metal twist-off lids. Another area of concern is the transfer of mineral oil saturated hydrocarbons (MOSH) from recycled packages. Many different types of MOSH chemicals are used by the baby food industry either directly or indirectly and many foods become contaminated with them. These chemicals are easily absorbed by the body but are not broken down. They can accumulate in certain organs, such as the liver, heart and lymph nodes and may cause them to become damaged or diseased. Recent studies of commercial

baby food found MOSH in all of the samples tested. Pouches are also not without their risks and the caps pose a serious choking hazard to babies and toddlers.

Policies and Legislations Concerning to Commercial Baby Food Product

Baby food serves as food for a group of our population that is more vulnerable to illnesses and toxins, and therefore baby food manufacturers have to be extra vigilant with regard to the quality of their raw materials and processing and quality parameters. Besides food safety concerns, baby food has to be nutritious and is guided by legislation and regulations in all countries. Manufacturers of baby food must familiarize themselves with all of the regulations and requirements of the products they wish to produce

Policies related to Baby Care Market in India include Infant Milk Substitutes Act (1992 & 2003), Infant Milk Substitutes, Feeding Bottles & Infant Foods (Regulation of Production, Supply & Distribution) Act, 1992 & 2003 and Bureau of Indian Standards. Apart from policies government bodies related to Baby Care Market in India include Food Safety and Standards Authority of India, Breast feeding promotion network of India (BPNI), Association of Consumer Action on Safety and Health (ACASH), Indian Council for Child Welfare (ICCW), Indian Academy of Pediatrics and Indian Medical Association.

Conclusion

It is right of a child since birth to be provided with healthy and wholesome food to aid optimum growth and development. Consumption of baby food is influenced by educational level, media culture and previous experience of weaning. It is therefore important for health professionals to be aware of this dichotomy of opinion between professionals and parents and for industry to improve baby foods to be more in line with complementary feeding guidelines for optimal growth and development of the child.

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