Avoiding Obesity Related to BPA in Plastic Materials

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**Abstract**

Since the early 1960s, plastic companies have produced a chemical known as Bisphenol A in the manufacturing of containers and other plastic items. Through various destructive mechanisms such as the potential disruption of the endocrine, and result in the interference with metabolic processes, the chemical contributes substantially to the rising cases of obesity in individuals. The matter becomes complex by the fact that in America and many other countries, most people prefer to use plastics in the process of packaging their foods. To demonstrate the manner in which the process of using plastic materials contributes to the cases of obesity, a study examined students from three schools in Atlanta, Georgia. The learners were drawn from a one elementary level school, one middle-level school, and one high school. In this research, an average of 98% of the studentsparticipated (Barlow, 2009).

Qualified and properly trained research staff members collected urine from the students and measurements of the BPA concentration as well. Additionally, the research team received the anthropometric data that would be used in determining the possible causes of obesity. Moreover, the team sought to know the lifestyles of the pupils to collect sufficient information that could be useful in determining the risk factors for obesity in this group of people. The relationship emerged from the analysis that there is a significant relationship between people who had a high concentration of BPA in their urine and people wereobese. Additionally, it emerged that the rates at which BPA concentration in urine leads to obesity in males are very different from the way it manifests itself among females. That fact is useful since it provides an avenue to find means that would respond to both male and female compositions in terms of BPA concentration. The gender differences that emerge in this study are consistent with previous papers that suggest that susceptibility to obesity is different among males and females in society.

On April 14th, 2008, the debate on BPA in plastics reached another level of discussion when it appeared on the headlines of the Washington Post. Concerning its safety debate, there were many commercial, political and scientific interests involved. America alone produces a billion dollars’ worth of BPA products in the market each year. Thus, due to the economic interests that are involved, there is likely to be political heat. The political players would like to appease the electorate by encouraging job creation as opposed to the killing off industries. Scientifically, however, research shows that there is a significant relationship that exists between BPA in plastic materials and the rising cases of obesity among American citizens (Ben-Jonathan & Brandebourg, 2009). Consequently, the widespread application of BPA in the entire globe has contributed significantly to the worldwide obesity epidemic. In that regard, this research sought to provide the possible mechanisms that can be deployed to avoid or possibly drastically reduce the instances of obesity that are associated with BPA in plastic materials.

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**Background**

In the recent decades, the world has seen a soaring increase in the number of obesity among populations. The most intriguing part of this realization is that most of the new cases are children. In the United States, statistics indicate that an average of 20% of children is obese. With this realization, it has become important that all the stakeholders including the government seek the factors that contribute to this trend and make necessary improvements (Lang et al, 2008). Obesity is a condition that contributes to some health complications among those affected especially children. Ordinarily, it predisposes the children to the type 2 diabetes, hypertension, coronary heart disease and stroke. Besides, the children stand the risk of developing kidney and liver diseases. Traditionally, people have linked obesity to eating habits among the various communities. However, in the face of the increase in the cases of obesity amidst the different healthy eating habits that the society has decided to adopt, it becomes necessary to examine other factors that could be aiding this development. Besides, emerging evidence from research activities globally that link obesity to other environmental factors apart from the diet makes it necessary to adopt new measures to combat the problem.

The environmental factors that cause obesity are collectively called environmental obesogens. The environmental obesogens are the environmental components that have been recognized to can fuel the chances of obesity among human beings. BPA is one of the potential obesogens that researchers have found to be at the forefront in increasing the epidemic of obesity among persons. Sadly, every day, most human beings are in one way or another exposed to these chemicals, and that exposes them to obesity. In the recent times, some researchers have come up with different opinion suggesting that the human biological system is properly equipped to handle these harmful substances. However, several research results prove otherwise. It is, therefore, necessary to provide relevant information to reduce the numbers of obese people, especially among the children.

The general belief is that it is possible for people to come up with alternative ways with which they can carry out their activities and at the same time avoid exposure to BPA. In that regard, this paper holds that plastic materials that individuals use in their daily lives have a huge responsibility to play in the increase in the number of obesity among persons in all communities. It is therefore incredibly important to seek alternative chemical components that can be used in the manufacturing of plastics so that the people do not experience these problems. Besides, chemical users can resort to other materials that do not contain such harmful substances. In the end, the study will present some of the choices that individuals can make to avoid BPA.

Literature review

Zuckerman et al., 2015 had the following to say concerning obesity and the chemical. In their piece of work, the researchers begin by taking note of the fact that the use of BPA-manufactured materials is on the rise in the United States. They uncover that the chemical is used in the manufacturing of a wide range of materials that include the coating of food and beverage cans, making of water bottles, manufacturing of sports equipment as well as medical devices alongside other materials. That fact is meant to demonstrate that almost all the spheres of the society contain materials whose chemical components include the harmful BPA.

In 2012, the Food and Drug Administration in the United States banned the use of BPA in baby bottles. The agency take into consideration the fact that there is a myriad of problems that accompany the use of the substance among children. The report indicates that the problem with this chemical is that the moment it receives even the slightest amount of heat, it detaches from the item which it coats and then mixes with the hot liquids (NTP, 2008). When consumed, it initiates some activities in the body which normal endocrine function. Expectant mothers who are exposed to the chemical stand the chance of exposing their unborn babies to the chemical as well. Thus, a baby may become obese due to the contact with the BPA that was consumed by the mother during the pregnancy.

In the year 2009, a group of researchers from the Harvard School of Public Health conducted research to determine the ways in which plastic materials affected the health of individuals through the various drinks that they use. Some students were given cold drinks from plastic bottles for two weeks. After this period, the scientists conducted tests on their urine and discovered that the amounts of BPA in their urine increased by more than two-thirds. In this study, the liquid in the containers was not hot and yet there was a notable presence of BPA in the blood samples that were collected. If the liquids were hot, the chances were high that the BPA content in the system would be much greater. The data clearly demonstrated that using plastic materials in handling human food results in the increase of BPA in the human body.

In April 2008, the lead researcher from Harvard School of Public Health collected a group of students to carry out an experiment. A total of seventy-seven (77) students were involved. At the onset of the experiment, the students were given water to drink from stainless steel containers for one week. The primary purpose of this exercise was to carry out a washout procedure that would result in minimum exposure to BPA (La Pense et al, 2008). After this first stage, the urine of the students was collected and the BPA contents measured. After the first phase, the students were provided with beverages to drink from polycarbonate bottles. After a week of this exercise, the students were again requested to give urine. The researchers compared the contents of BPA in the urine after the two weeks of the test. The results showed that there is a significant difference in the BPA levels in urine that was produced after drinking beverages in plastic containers and from the stainless-steel materials.

One of the strengths of this study from the Harvard School of Public Health is that it was conducted in normal circumstances and the students drank from the two sets of containers in standard settings. There was no modification to any materials. The essence of this benefit is that if the researchers would have requested individual plastic containers that had been given different quantities of the chemical, then the authenticity of the research would be in doubt since the materials were not the ones that are used by people in ordinary circumstances. Additionally, the fact that the students did not expose the elements to heat makes the research believable since it has been determined that heat has the capacity of removing the chemical that usually exists on the surface of the containers.

During the time when the study was conducted, there was a debate in America and other developed nations on the impacts that these materials have on the general well-being of the people. In that regard, some agencies, departments, and organizations sought scientific proof that the chemical had serious health ramifications on the users. In that vein, some organizations, including Harvard University Center for the Environment among others, sponsored the study. There was a tremendous desire to determine if indeed the BPA or the eating habits could be responsible obesity among people.

Some individuals, politicians, say something to the effect that they have invested interest in plastic products, and plastic materials industry players have always held a misconception that BPA does not have the capacity to interfere with the proper functioning of the body. Some of these persons hold that the human body is sufficiently equipped to break down these chemicals and turn them into substances that would be harmless to the body. It is necessary to prove that this position is unscientific and misleading. A piece of research from Health Canada suggests that it is incorrect to insinuate that the body can break down BPA into substances that do not pose any threat to the body. In line with this assumption, the research demonstrates that the liver is not able to metabolize the BPA substance inactive metabolites.

Within six hours after the body is exposed to the substance, the liver metabolizes approximately half of the BPA concentration that has got into the body. Most of this substance is metabolized into a simpler substance called the glucuronide which the body can excrete to prove their point; the researchers injected the metabolized material into a mouse and a human cell. From this activity, it became apparent that there was a massive accumulation of lipid. The intention of this was to determine whether glucuronide was an inactive substance as had been indicated by other scholars.

The principle that the scientists used in this case is the fact that not all human cells are able to accumulate fats. In that regard, if the cells that do not accumulate fats are found to have lipids only after the injection of the metabolized substance, then that would be a clear signal that glucuronide is indeed biologically active. While it is true that the liver plays a major role in filtering the chemicals that get into the body and protect them from causing damage to the body, it is also true that it does not do the cleaning. That is, the liver does not have the capacity to remove harmful substances from the body. That realization flies right in the face of arguments that the human body can convert BPA into other forms of elements which it can then harmlessly excrete from the system.

Finally, in the 1980s, there was an increase in the production of BPA in America. Records indicate that the manufacturers produced billions of BPA materials. During this time, the various stakeholders became concerned and sought to find the effects of the materials especially about obesity. In 1988, the National Toxicology program carried out research and made publications on the health effects that arise from the continued use of the substance in materials. In the 1988 findings, the researchers found that there is a direct link between the utilization of the chemicals and the increase in the cases of obesity among people. The central argument of the researchers is that the chemical interferes with the endocrine system. The fact is that BPA is found to facilitate the production, processing, and transportation of hormones that disrupt the everyday functioning of the endocrine system. In the end, all the articles and publications point at a single trend that is caused by continued exposure to the substance. In that regard, they point at a common trend in many communities where the continued use of BPA-manufactured materials contributes to obesity. The articles, therefore, call for the abolition of the chemicals in the making of plastic materials.

**Methods and materials**

To confirm the effects of BPA in metabolic pathways, an investigation to be done. The best way to test the presence of BPA in the body is to use urine tests. Over the years, various studies have discovered some ways that can be used to determine the levels of BPA in the human body. The following is a description of the methods and materials that were used to confirm the presence and effects of BPA in the human system. For the purposes of this test, the dependent variable in the concentration of BPA in urine while the independent variables are drinking cold water from a plastic container, drinking warm water from a plastic container and drinking warm water from a glass. The controlled variable is the regulation of the temperature of water.

The study composed of nine (9) males and eleven (11) females’ participants. To assess the effects and concentrations of BPA among the various age groups, the research used men ranging from 44 years to 12 years. The eldest female in the group was 46 years while the youngest was 11. In the process of recruiting the participants, there were some ethical standards that were considered. Firstly, the individuals were assured that the results of the study would be confidential and would only be shared with third parties upon their approval. Additionally, the selection considered the previous health records and lifestyles that could have an influence on the outcome. In the inquiry, ten participants were of ill health while the rest were of otherwise perfect health standards. The individuals who were not of good health were recruited by the author from previous medical practice. Once the participants had been identified, each participant was requested to provide a 200ml sample of blood, a sample of first-morning urine and a hundred (100) ml of sweat. After all these samples had been collected, they were then analyzed for both the demographical and clinical characteristics. The results were recorded in the table below;

Table 1

*Mean and standard deviation of weight, height, and body mass index (BMI) among study participants*

| **Group** | **No. (%)** | **Weight (kg)** | **Height (m)** | **BMI (kg/m2)** |
| --- | --- | --- | --- | --- |
| All | 259 (100.0) | 47.4 ± 16.5 | 1.47 ± 0.13 | 21.3 ± 4.6 |
| Age (years) |  |  |  |  |
| 8-9 | 64 (24.7) | 32.5 ± 9.3 | 1.31 ± 0.06 | 18.7 ± 4.0 |
| 10-11 | 80 (30.9) | 43.6 ± 11.2 | 1.45 ± 0.08 | 20.5 ± 3.7 |
| 12-13 | 75 (29.0) | 54.6 ± 14.9 | 1.55 ± 0.09 | 22.3 ± 4.4 |
| 14-15 | 40 (15.4) | 65.6 ± 12.9 | 1.62 ± 0.07 | 25.0 ± 4.6 |
| Sex |  |  |  |  |
| Female | 129 (49.8) | 47.3 ± 15.1 | 1.48 ± 0.12 | 21.1 ± 4.3 |
| Male | 130 (50.2) | 47.6 ± 17.9 | 1.46 ± 0.14 | 21.4 ± 4.9 |
| BMI |  |  |  |  |
| Normal weight | 124 (47.9) | 36.7 ± 10.9 | 1.44 ± 0.14 | 17.4 ± 2.1 |
| Overweight | 53 (20.4) | 52.8 ± 12.5 | 1.50 ± 0.13 | 23.0 ± 1.9 |
| Obesity | 82 (31.7) | 60.1 ± 15.3 | 1.50 ± 0.12 | 26.0 ± 3.2 |

In grouping of the samples, urine was gathered using the vacutainer blood collection equipment that has over the years been recommended by the various medical regulatory agencies. 21-gauge stainless steel needles were also used together with vacutainer blood collection equipment to collect the sample. In the process, analysis of BPA in blood was collected in serum and the entire blood sample was not analyzed since there is a lower matrix effect on serum than on whole blood. Concerning urine, the individuals were instructed to provide the first-morning urine in a 500ml container that had a tight lid that was intended to prevent contamination. Finally, the participants were told to use suitable means to produce sweats that that were collect in a 500ml glass. Additionally, care was taken by the members to make sure that the sweat sample was not contaminated by any other foreign substances.

**The analytical methods**

For the analysis of the BPA levels in serum, the conventional procedures recommended by the Center for Disease Control and Prevention were used. Tests were braced with 12.5 nanograms of isotopically marked phthalate metabolites, 50 nanograms of named bisphenol-A, 250 nanograms of 4-methylumbelliferone glucuronide, 300 microliters of ammonium acetic acid derivation support (pH 6.5), and ten microliters of β-glucuronidase (Escherichia coli K12, Roche Biomedical). The examples were blended and brewed at 37°C overnight to take into consideration the de glucuronidation.

Using enzymatic hydrolysis, a 20 uL aliquot of the sample is added to 70 uL of HPLC-review water and ten ng of marked 4-methylumbelliferone to decide de glucuronidation effectiveness (done once every 100 specimens). The rest of the example was stacked onto a Zymark Rapid Trace Station for mechanized active stage extraction (SPE). The 60 milligram/3 mL Oasis-HLB cartridges got mixed with HPLC-review methanol (2 mL) and 0.1 M formic corrosive (2 mL). The examples were weakened with five mL of 0.1 M formic destructive and stacked onto the SPE cartridge at a rate of 1.0 mL/min. The cartridge was washed with water (1 mL) and 10% methanol in water (2 mL) at a stream rate of 1 mL/min. The examples were eluted with 1.0 mL of acetonitrile at a flow rate of 0.5 mL/min. The elate vanished to dryness under a flood of dry nitrogen, and the deposit was resuspended in 85% methanol in water (200 microliters) and exchanged to glass auto sampler vials.

Quality control of the examination was kept up by breaking down a technique clear (calf serum) and two spiked calf serum tests (20 ng/mL, all analyzes) alongside each 17 trials. The examination was performed utilizing an API 4000 fluid chromatograph/couple mass spectrometer.

Results and discussion

Table 2: The results for BPA in the tested body compartments: serum, urine, and sweat.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | | | | | | |
| Participant | Gender | Age | Clinical diagnosis | Serum conc. | Urine conc. | Sweat conc. | Sweat/urine ratio | Technique used for sweat collection |
|  | | | | | | | | |
| 1 | M | 61 | Diabetes, obesity, hypertension | 0 | 4 | 82 | 20.5 | Exercise |
| 2 | F | 40 | Rheumatoid arthritis | 0 | 22 | 24 | 1.1 | Steam sauna |
| 3 | M | 38 | Addiction disorder | 0 | 20 | 22 | 1.1 | Steam sauna |
| 4 | F | 25 | Bipolar disorder | 0 | 40 | 22 | 0.6 | Steam sauna |
| 5 | F | 47 | Lymphoma | 0 | 10 | 24 | 2.4 | Steam sauna |
| 6 | F | 43 | Fibromyalgia | 0 | 32 | 0 | n/a | Steam sauna |
| 7 | F | 48 | Depression | 0 | 0 | 16 | n/a | Steam sauna |
| 8 | F | 40 | Chronic fatigue | 0 | 0 | 22 | n/a | Infrared sauna |
| 9 | F | 68 | Diabetes, fatigue, obesity | 0 | 0 | 10 | n/a | Steam sauna |
| 10 | M | 49 | Chronic pain, cognitive decline | 0 | 8 | 10 | 1.3 | Exercise |
| 11 | M | 53 | Healthy | 10 | 32 | 20 | 0.6 | Exercise |
| 12 | M | 23 | Healthy | 0 | 30 | 46 | 1.5 | Infrared sauna |
| 13 | M | 21 | Healthy | 30 | 4 | 10 | 2.5 | Infrared sauna |
| 14 | F | 47 | Healthy | 0 | 8 | 12 | 1.5 | Infrared sauna |
| 15 | M | 53 | Healthy | 0 | 4 | 35 | 8.8 | Infrared sauna |
| 16 | F | 43 | Healthy | 0 | 0 | 12 | n/a | Infrared sauna |
| 17 | F | 51 | Healthy | 0 | 0 | 0 | n/a | Infrared sauna |
| 18 | M | 46 | Healthy | 0 | 42 | 0 | n/a | Infrared sauna |
| 19 | M | 57 | Healthy | 0 | 0 | 0 | n/a | Infrared sauna |
| 20 | F | 50 | Healthy | 0 | 8 | 22 | 2.8 | Infrared sauna |
|  | | | | | | | | |

All the measurements in the table above are in nanograms per milliliter.

Graphical representation of the findings

Measurements are in nanograms per milliliter

The way that a few subjects demonstrated imperceptible levels affirms that summed up sullying of these specimens is not likely. Moreover, the levels of BPA were like those as of late distributed in studies of earlier periods and are practically identical to the serum levels discovered (0.79–7.12 ng/mL) in a current review. The relatively flat rate recognition among the serum tests in North America is difficult to look at because there is just a single review in the writing that archives BPA levels in the blood of North Americans. In that report, utilizing the same extraction strategy from the system employed as a part of this review, the creators detailed BPA levels in the scope of <0.5 (location point of confinement) to 22.3 ng/mL in the blood plasma of 40 pregnant American ladies in the condition of Michigan. Nonetheless, the creators did not report in what number of these 40 women that BPA was recognized over their present breaking point of location of 0.5 ng/mL. When all is said and done, there is significant changeability in the scope of centralizations of BPA recognized in blood, and this might be clarified by the way that recognition techniques differ broadly and the particular populaces contemplated additionally shift extensively.

For the urine tests, the rate discovery in the present review (70%) is lower than that of the substantial scale American bio-monitoring study (90.7%) otherwise called the Canadian Health Measures Survey as announced by other scholars. Be that as it may, the geometric mean level of urine BPA in this review is for the most part higher than those in other bio-monitoring ponders in North America. To the extent sweat information is concerned, examination crosswise over reviews is unwarranted as this is the primary study which endeavors to measure BPA in sweat.

One clear subjective elucidation of the information from the 20 study members is that BPA is seldom distinguished in blood. That is likely why most enormous scale bio monitoring studies, such as the NHANES (National Health and Nutrition Examination Survey), utilize urine as the human specimen of the decision to decide introduction levels in populaces. While trying to compress the discoveries on the appropriation of BPA in the three various body liquids, the three tables in Figure 1. As talked about before, the two conflicting sets urine+/serum− and sweat+/serum− with 12 and 14 in their separate networks indicate unmistakably that serum is not the proper body liquid to test if BPA bio-monitoring in people is to be portrayed. Even though there is by all accounts great relationship amongst urine and sweat regarding the nearness/nonattendance of BPA in these media, with 12 people in the urine+/sweat+ concordant match, is additionally astounding that there are four people for which BPA was identified in sweatimperceptible in urine.

**Conclusions and Recommendations**

It is evident that this endocrine-disturbing compound has possibly negative results on the human body. With new proof for the likelihood of BPA collection inside the body, innovations to encourage the end of this dangerous compound have clinical significance as to the counteractive action and treatment of unfavorable results related with BPA bioaccumulation.

The consistency between BPA collection inside the body and what past tests indicate normally are helpful (La Pense et al, 2008). However, it is impossible that the new BPA discoveries were because of excess body weight prompting a higher urine BPA level in young ladies entering the pubertal stage. Firstly, the paper did not observe a similar relationship (urine BPA level) among older women. Had overweight prompted higher urine BPA levels, one would have anticipated that would watch a similar relationship in older women. Secondly, the research did not look at a comparable relationship regarding urine BPA level among young men either. Once more, this sexual orientation disparity of the affiliation cannot be clarified by weight as a reason for high urine BPA. Then again, this sex contrast can be explained by the discoveries from trial considers demonstrating sex particular BPA impact on stoutness, and other human reviews indicating gender distinction of environmental hazard elements for body weight (Layton, 2008). Both dosage reaction relationship and sexual orientation particular impact of BPA saw in the literature review are steady with the discoveries from trial thinks about. Such consistency makes it more outlandish that the discoveries be an aftereffect of different elements.

There are different instruments by which BPA could prompt corpulence through its opposite effect on the metabolic procedure. BPA has appeared to follow up on adipocytes and smothers the arrival of adiponectin in human fat tissues which could prompt insulin resistance and metabolic disorder (La Pense et al, 2008). BPA, similar to DES, follows up on estrogen receptors which could prompt corpulence in a sex particular and measurements reaction way. That may clarify the watched Sex-particular impact. Different systems incorporate BPA impact on the pancreas, thyroid hormone pathways, and mind capacities.

The project has control over some known hazard components for youth corpulence including dietary variables and physical action. In this review populace, urine BPA did not appear to be identified with many risk elements for weight. Another potential restriction is that inquiry didn't have data on potential confounders amid pregnancy including maternal gestational diabetes, birth weight, or preterm conveyance (Rubin & Soto, 2009). Likewise, the specimen size was not sufficiently extensive for subgroup examination which may have prompted the powerlessness to achieve measurable noteworthiness for a few appraisals. Finally, just a single spot urine test was gathered in the review. Urine BPA has been accounted for to be moderately steady. It has likewise been demonstrated that a single spot urine test gives a sensible, decent measure of particular BPA presentation level once the example size is reasonably massive. Any variety in urine BPA would have brought about non-differential misclassification of BPA introduction level that is free of the result. The presence of such misclassification would have brought about under-estimation of the quality of the watched affiliation.

The qualities of the review incorporate a high investment rate, different bits of supporting proof including dosage reaction relationship and predictable outcomes utilizing other corpulence measures (however some did not achieve factual essentialness), and being steady with discoveries from test creature considers and a current human review. The beforehand announced human review depended on NHANES information from the U. S. populace.

Confirmation is collecting that obesogens, for example, BPA introduction might add to the overall obesity pandemic. As a potential ecological obesogen, BPA presentation warrants especially careful examination given the across the human board introduction, particularly considering that the opening level is higher in youthful youngsters (Spierow & Lister, 2008). Both of these certainties (an obesogen to which a greater part of the populace are being uncovered, and higher introduction level in kids) could have critical ramifications for the plague of youth heftiness.

In conclusion, various research papers have demonstrated that people can bring down their BPA levels altogether by maintaining a strategic distance from pre-packed food items and shielding sustenance from coming into contact with plastic holders, plastic utensils, and non-stick skillet amid readiness, eating more health products such as beans, and storage is very significant in avoiding obesity in line with BPA. BPA is found in polycarbonate (PC) plastics, which are usually evident and hard, set apart with the reuse image "7″ or may contain the letters "PC" close to the reuse picture. Additionally, individuals need to abstain from warming up nourishment in plastic holders with these or different chemicals, utilize stoneware, china, or glass dishes and compartments in your microwave. In 2011, an European Union ban was issued regarding the use of BPA products. Still, in 2012, the FDA prohibited BPA in infant containers and kids' drinking mugs, after a few substantial makers had as of now deliberately expelled it (Newbold, 2008). In any case, bottles from before 2012 may at present contain BPA. However, policy approach is United States is intensely different from Europe. For instance, in France, the use of BPA in products that come into direct contact with food for babies as well as young children, such as feeding bottles was banned back in the year 2010 (Zuckerman et.al, 2009). Besides, later in the year 2015, France introduced a new law that banned the use of BPA in all food packaging which was termed by the EFSA as disproportionate and needed to be withdrawn. Another issue is that manufacturers are supplanting BPA in plastic jugs with different chemicals that experts accept to have some indistinguishable impacts from BPA yet that people know even less about. Most significantly, the ESAS concluded that BPA should be used as the basis for unswerving and coherent European Food Safety Regulation, and should be therefore respected by all member states. Consequently, guardians might need to incorporate more secure options, for example, glass child bottles, especially for use at home.

**The relevance of the topic to a nurse**

Nurses have a duty to inform their patients on some of the issues that affect the quality of life. In America, a huge population is struggling with the problem of obesity. Due to the fact there most people do not have the knowledge of some of the underlying causes of the condition; it becomes necessary for the nurses to have this knowledge so that they may pass it over to their patients. In that regard, the nurses will contribute to the development of a healthy society.

**Policy change**

Currently, there are a wide range of policies that the government authorities have put in put in place to curb the use of BPA in plastics. However, the current policy is deficient in the sense that it seeks to protect only children. The government has strict provisions that ban the use of the chemical in baby bottles. On the other side, it leaves the field open for the manufacturers to include it in the items used by adults. In that regard, it fails to take note of scientific evidence that the consumption of BPA by expectant mothers affects their unborn children. In that regard, there ought to be a policy change that seeks to abolish the use of BPA in all sorts of items due to the health concerns that it has.

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