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Australia, Malnutrition

Australia: Gardening to lower Iron Deficiency

Australia is a country located in Oceania in the Southern Hemisphere. It is the smallest continent but the biggest country with a population of 25,499,884 people which has doubled in the past 50 years. However, of this population 5 percent or 1.1 million are deficient in the important mineral iron. For the human body to have proper growth and development it is valuable to receive iron. The population is broken down as 50.7 percent of the population being female and 49.3 percent being male. Most of Australia is considered urban with 85.9 percent of the population in cities and 29 percent of the population is rural (worldometers). Australia has many different climates that allow many different crops to be grown. Northern Australia is semi-tropical and has both a wet and dry season. The western and the central regions of the continent are deserts with a dry climate. Twenty percent of Australia is classified as desert land. The eastern part has mountains, forests and good rainfall. This area is the best suited for farming. The highest point on the Australian Mainland is Mount Kosciuszko, in New South Wales. It is 2,228 meters above sea level. The lowest point in Australia is the bed of Lake Eyre, South Australia which is 15 meters below sea level. Rainfall in Australia is concentric so most of the rain falls in the middle of the country with an average of 19 inches.

The land mass of Australia is 1.901 billion acres and 59 percent of the land is used for agricultural production. There are 46,048,000 acres of arable land and this land cultivates many crops during summer months. Fifteen percent of Australia's exports are crops. Eighty-seven percent of the crops grown in Australia are wheat, fruits such as nuts and grapes, vegetables, barley, and canola; others include sorghum, cotton, and sunflowers. Some major agricultural exports include animals such as beef cattle, dairy cattle, and sheep. Beef herds on average have 805 head, dairy cattle herds have 412 head, and sheep flocks contain 2,857 head. Australia is one of the top producing beef countries in the world. This benefits the Australians by producing more iron dense meats. The average farm size is 4,331 hectares which would be around 10,697 acres. A total of 85,861 acres are used for farming businesses such as big corporations like JBS Australia and Cargill Australia. The biggest farm in Australia is the Anna Creek Station. It is 2.4 million hectares and it is the third largest farm in the world as well. The Clifton Hills and Alexandria are fourth and fifth largest in the world occupying approximately 14,200,000 acres of Australia's land.

Education in Australia lasts for 13 years. Children begin their education in primary school. This starts at Kindergarten and goes through to year six or seven. Secondary school starts at seven years and goes to ten years, and senior secondary school includes years eleven and twelve. Public schools in Australia are free while 60 percent of Australians go to school; however 99 percent are literate. Private schools are popular as well with 40 percent of kids attending Catholic schools, but there is a greater price tag attached to this education. With higher education rates this makes educating students on Iron deficiency and their daily diet easier. Students attend school for 10 weeks from late January or early February, and stop in mid December.

Many Australian households are multi-generational. Normally boomers are taking care of their parents as well as their Generation Y children who are home doing studies. There are 2.4 people per average household, and 44.7 percent of households have children living with them. Thirty eight percent of Australians live as a couple without children, 15.8 percent are single parent households. Eighty one percent of single parent families are raised by females and 18.2 percent are raised by males. Divorce rates are also high in Australia with 49,116 couples getting divorced around the age of 38 with two children. Often couples stay together because they can not financially support getting a divorce. Generation Z has made a big impact on society being they have taught their parents and grandparents more about technology compared to what they grew up with.

Most of the households in Australia are family households, and make up 3/4 of the population. However, 1 in every 4 households has only one person living in it. Fifty five percent of lone households are female around 64 years old. The other 45 percent are 54 year old males. The most populated parts of Australia are the mainland with 80 percent of the population living there. The mainland is surrounded by many smaller islands with most of the population living in Western Australia, South Australia, Queensland, New South Wales, and Victoria. This allows for many imports of food from surrounding islands that have more nutritional value to be distributed.

Health care in Australia has two levels: public and private health systems. Public systems include hospitals, health organizations and territory governments. Australians can access public health care by the public health system at a lower cost or even free through medicare and tax money. This helps Australians receive help if there iron is extremely low or causing long term effects such as abnormal heartbeat or heart failure (NHS Inform). The private system is a little different. This health care is managed privately in private hospitals, and pharmacies. This money is funded through government, and private organizations. Medical professionals are normally who the patient would go to when wanting to receive healthcare. The average health care policy costs Australians around \$2,000.

There are an estimated 250 different aboriginal groups in Australia. Some of the aboriginal population come from two different backgrounds. They are either related to those who came over to Australia in 1788, others are descendants of the Torres Strait Islanders. Aboriginal people identify themselves and then are accepted by the community that they live in. Currently 81 percent of aboriginals live in cities and not remote areas. New South Wales, Queensland, and Victoria contain and house 68 percent of the aboriginal population. However Tasmania, the poorest Australian State also houses many indigenous populations. The average age of the aboriginal population is 28 compared to non-aboriginals who average 37 years of age. Aboriginal households consist of an average of 3.2 people.

The median wage earned in Australia is \$662 per week and in America most earn \$936 per week. In Australia job opportunities, and income earned depends on the state that they reside from. The Australian Capital Territory has the highest median income at \$998 per week. Since being the poorest state only \$573 are earned per week in Tasmania. The highest paying job in Australia is the Head of Legal Compliance as they can earn up to \$277,500 a year. However, the lowest paying job is an office receptionist earning \$46,946 a year.

All Australians typically fall short of eating the proper amount of fruit and vegetables per day. It is challenging to purchase fresh healthy food because it is too costly. One third of the normal diet is composed of junk foods including biscuits, chips, ice-cream, and alcoholic beverages. The most consumed junk foods include desserts, pastries, and alcohol. The drinking age is 18 years old, and ages 14-18 eat the most junk food. Only 15 percent of kids receive 60 minutes of physical activity daily. In males ages 51-70 eighty percent are obese. The average grocery bill in New South Wales is \$254 per week. A family of four with kids under 5 year of age spend \$282 dollars a week on groceries, while a family of four with kids over 15 spend \$332 a week.

On average a loaf of bread costs \$6.97. Dairy products such as milk and yogurt are \$14.16. The least expensive food is one pound of rice which costs about \$1.29, but fruits cost \$13.50 and vegetables cost \$16.58. Proteins such as meat cost \$26.73 a pound whereas in America proteins cost from \$3 to \$6 per pound.

While the prices in Tasmania are lower because of reduced earnings, it is still difficult for people to afford healthy food. Basic items like bread, fruits, and vegetables are very expensive, and red meat can sell for as much as \$24 per pound. Little access to red meats combined with the price of iron-rich vegetables being too expensive makes it difficult to consume the proper amounts. Since the food is so costly people can't consume the proper nutrition, making iron deficiency very common in poorer communities.

The most common meats consumed in Australia are chicken, pork, beef, lamb/goat, fish and some kangaroo. Australia consumes 600 million chickens a year which is approximately 49.2 kilograms per person. Pork contains 0.7 mg of iron and is a highly consumed meat. Once considered a red meat, pork has been rebranded as a white meat making it healthier than beef. Beef contains 2.2 mg of iron. The prices have also changed the market for meat. Poultry is much cheaper to purchase than red meats and has the most iron per serving at 3.6 mg. Over the past years the price of pork, beef, and lamb has rapidly increased (The conversion). There are many different cultures and styles of food in Australia. Food styles come from many different places such as Indigenous, European, and Asian flavors and cooking techniques. Popular meals in Australia include hamburgers, crab sticks, grilled kangaroo, and lamington.

Iron deficiency anemia is very common in many people who live in Australia. Fourteen percent of pregnant women and adolescents have some level of iron deficiency. Pregnant women need 27 mg a day and adolescents need from 9 to 15 mg a day. Women between the ages of 19 to 50 need 18 mg to maintain healthy levels. Unfortunately the aboriginals have the lowest iron levels out of all the Australian population. In the aboriginal population, 23 to 25 percent are low in iron. This is because the foods that offers high iron tend to be more costly therefore, are not bought in large enough quantities to feed large families.

Many aboriginal Australians live in cities and suburbs of large cities with full time working jobs. Not all aboriginals are living at this level of prosperity. Currently there are 1,200 aboriginals living below the poverty line and 30 percent are in low income households. Up to 70 percent do not own their own house and instead live in rental houses. Some aboriginal people do not have much education or work experience, this makes it difficult to secure a job and make enough money to support themselves and their families in a country with a higher cost of living. A big challenge that the aboriginal community faces is finding

nutritious food to fuel themselves and family members. This makes it even more important that this group receive education about what is best for their health.

No matter the amount of space available it is always possible to grow fruits and vegetables that fit the need to keep Australians healthier. This could include window boxes with herbs and small vegetables, or a garden that will allow many different crops to be grown. The different climates in Australia are helpful when it comes to gardening. It allows different crops to be grown year round. The south east zone of Australia is cooler, and this allows vegetables such as cabbage, broccoli, and spinach to grow. These vegetables are easy to grow as well as are high in iron and nutrients. The southern portion of Australia has a warmer climate, and sweet potatoes are a very good crop to grow year round. The peel is very high in iron and rich in other nutrients. Other foods such as almonds, and cooked brown rice are foods that contain more iron. High iron foods that can easily be grown could be leafy greens like spinach and kale, along with beans, lentils, soy, tomatoes, and, olives

It is important that aboriginal Australians are educated about their health along with foods they are able to grow, how to maintain a garden, and harvesting. This knowledge is necessary, it allows aborigines to get the most out of their gardens or planters. It is important that school children learn about gardening as well. Since only some of the aboriginal population goes to school that is not the most effective way to educate them all. An alternative way to educate indigenous populations is by working with the Australian Government Department of Health on extension programs. These programs allow Australians to learn more about nutrition, and ways to improve their health. Working with non-profit organizations in Australia can also help educate the indigenous and teach about nutrition at an affordable price. Foodswell is a non-profit organization working to make sure that indigenous Australians have a healthy and affordable diet.

Helpful supplies such as seeds, and shovels, can be given to indigenous Australians. Products could be supplied by donations, and seeds could be given from big seed companies. Fairbanks Seeds is a company owned and operated out of Australia (Fairbanks Seeds). Fairbanks Seeds has offices in Queensland, Victoria, and South Australia. However, they do have agents all throughout Australia (Seed Quest). Donating expired seeds that can no longer be distributed to customers would be helpful to the indigenous population. Expired seeds are important to use because they will still germinate to their full potential if used within one year after the expiration date. This still allows for a healthy living, and full production of the plant. Working alongside schools to give supplies to students to take home will allow the child to educate themselves, and their families. Distributing supplies during extension programs gives the potential to provide families with what they need to be successful.

Utilizing this solution to the malnutrition problem in aboriginal Australians will not be an easy task. It will not change the health of Australians overnight. With this realistic and innovative solution steps can be made for better nutritional eating which will lead to less food insecurity, and higher iron levels in Australians.

Sources

“The 5 Biggest Farms in World.” Herdsy.com, 2 May 2019, herdsy.com/the-5-biggest-farms-in-world/
Australian Government Department of Health. “Anaemia.” Australian Government Department of Health, Australian Government Department of Health, 3 June 2019, [www.health.gov.au/resources/pregnancy-care-guidelines/part-f-routine-maternal-health-tests/anaemia#:~:text=Data%20from%20Western%20Australia%20and,%3B%20Lewis%20et%20al%202009\).](https://www.health.gov.au/resources/pregnancy-care-guidelines/part-f-routine-maternal-health-tests/anaemia#:~:text=Data%20from%20Western%20Australia%20and,%3B%20Lewis%20et%20al%202009).)

“Average Grocery Bill & Cost of Food Statistics: State by State Comparison.” Budget Direct, www.budgetdirect.com.au/home-contents-insurance/research/average-grocery-bill-statistics.html.

Best Migration Services. “Three Best Agricultural Business Investment Opportunities in Australia.” Best Migration Services, 20 Jan. 2020, www.bmsmigration.com/three-best-agricultural-business-investment-opportunities-in-australia/.

Blakemore, Erin. “Aboriginal Australians, Facts and Information.” Culture, National Geographic, 10 Feb. 2021, www.nationalgeographic.com/culture/article/aboriginal-australians.

Davidson, Peter, et al. “Poverty in Australia 2020 - Part 1: Overview.” Peter Davidson, Peter G. Saunders, Bruce Bradbury, Melissa Wong, Australian Council of Social Service, University of New South Wales, 21 Feb. 2020, apo.org.au/node/276246#:~:text=3.24%20million%20people%20in%20Australia,the%20poverty%20line%20in%20Australia

Elizabeth Taylor. Vice Chancellor's Post-Doctoral Research Fellow, and Andrew Butt Senior Lecturer in Community Planning and Development. “Three Charts on: Australia's Declining Taste for Beef and Growing Appetite for Chicken.” The Conversation, 24 Oct. 2019, theconversation.com/three-charts-on-australias-declining-taste-for-beef-and-growing-appetite-for-chicken-78100#:~:text=Beef%2C%20mutton%20and%20lamb%20were,consumed%20meat%2C%20followed%20by%20pork.

Gardensalive, Mike. “Are Old Seeds Still Good? When Do You Start SEEDS? Can You TIME Pumpkins for Halloween Harvest?” *Gardens Alive!*, Gardensalive, 5 Feb. 2001, www.gardensalive.com/product/are-old-seeds-still-good-when-do-you-start-seeds-can-you-time-pumpkins-for-halloween-harvest#:~:text=Seeds%20that%20are%20only%20a,them%20to%20a%20germination%20test.&text=Viable%20seeds%20should%20sprout%20by%20day%20ten.

“Iron Deficiency Anaemia Symptoms and Treatments.” *Illnesses & Conditions | NHS Inform*, www.nhsinform.scot/illnesses-and-conditions/nutritional/iron-deficiency-anaemia.

Korff, Jens. "Aboriginal Population in Australia." Creative Spirits, 7 Feb. 2021, www.creativespirits.info/aboriginalculture/people/aboriginal-population-in-australia#:~:text=More%20than%2068%25%20of%20Aboriginal,22%25%20of%20the%20Aboriginal%20population.

"Low Levels of IRON among Young Australian Women Is on the Rise." *Clinical Labs*, www.clinicallabs.com.au/about-us/commercial-media-releases/low-levels-of-iron-among-young-australian-women-is-on-the-rise/.

"Main Features - Snapshot of Australia, 2016." Australian Bureau of Statistics, Australian Government, www.abs.gov.au/ausstats/abs@.nsf/Lookup/2071.0main+features22016#:~:text=The%20majority%20of%20Australians%20continue,Australian%20Capital%20Territory%20in%202016.

"Marriages and Divorces, Australia, 2019." Australian Bureau of Statistics, www.abs.gov.au/statistics/people/people-and-communities/marriages-and-divorces-australia/latest-release#:~:text=In%202019%2C%20113%2C815%20marriages%20were,'article'%20for%20more%20information

Mike Smith Executive Editor at Best in Australia. "5 Top Lowest Paying Jobs in Australia - Men and Women." Best in Australia, 11 Jan. 2019, bestinau.com.au/lowest-paying-jobs-in-australia/

Morse, Madison, et al. "21 Organizations Transforming Australia's Food System." Food Tank, 30 Jan. 2019, foodtank.com/news/2019/01/21-organizations-transforming-australias-food-system/

"NWI Visas." Manage Your Entire Immigration Process Online, www.nwivisas.com/nwi-blog/australia/here-are-some-facts-about-australian-schools/.

Rhiannon. "More Than Meat Pie: What Exactly Is Australian Cuisine?: Quisine: Quandoo Blog – Feast on the Latest Food Stories." Quisine, Quandoo, 12 Nov. 2020, quisine.quandoo.com.au/stories/modern-australian-cuisine

Rebecca Golley. Associate Professor (Research) Nutrition and Dietetics. "Three Charts on: How and What Australians Eat (Hint: It's Not Good)." The Conversation, 2 Nov. 2020, theconversation.com/three-charts-on-how-and-what-australians-eat-hint-its-not-good-105646

"Top 10 Highest Paying Jobs in Australia in 2021." Michael Page, www.michaelpage.com.au/advice/market-insights/industry-reports/top-10-highest-paying-jobs-australia-2021.

Woodgate, Thomas. "Australian Food: 40 Dishes Locals like to Call Their Own." CNN, Cable News Network, 12 July 2017, www.cnn.com/travel/article/australian-food/index.html.

